

## REQUESTS FOR INFORMATION

The following inquiries have been received by **ELECTRIC REFRIGERATION NEWS**. Readers who can supply information on these subjects are invited to write at once, referring to the Query number.

### Data on Frostic Machine Wanted

Query No. 63—"We notice in your January 4 issue, containing your Electric Refrigeration Directory, you do not mention the Frostic machine. Will you kindly give us what information there is available concerning this machine, together with information as to who manufactures it, etc.?"

### Who Wants a Distributor in India?

Query No. 64—"The Tennessee Furniture Corporation of Chattanooga have advised us that you would probably be in position to tell us the names of manufacturers of electric refrigerator units who are anxious for export business, and who are not at present represented in India."

"We have a good client located in India who is anxious to obtain the representation of an American electric refrigerator unit, and any assistance you can give us in this connection will be greatly appreciated."

### Who Makes Silverice Balls?

Query No. 65—"We have had several inquiries regarding 'Silverice Balls' and I am wondering whether or not you can give us the address of the manufacturer?"

### Wants Best Book on Electric Refrigeration

Query No. 66—"Would you kindly let the writer know what you consider the best book on electric refrigeration, that is, mechanical refrigeration at the present time?"

### Wants Figures on Carlot Shipments of Refrigerators, by Counties

Query No. 67—"We have a client who is interested in obtaining statistics of carlot shipments of refrigerators, by county, if such information is available. There seems to be no government reports on this subject, and we thought that you might have material on the subject."

### Another Request for 1927 Sales Figures

Query No. 68—"Will you please furnish us the per cent of sales of each household electric refrigerator manufacturer since September 1, 1927?"

### Manufacturer Wants Handles for Ice Cube Trays

Query No. 69—"Can you advise us of manufacturers of small handles such as are used on the ice pan for freezing cubes?"

### Exporter Wants Cabinets that Can be Shipped Knocked Down

Query No. 70—"We are very much interested in finding a manufacturer of ice boxes for electric refrigeration, who can supply us with details for boxes shipped knocked down. You will realize when shipping to foreign countries a set-up box pays an enormous amount of freight, and consequently heavy duties. The result is that the delivered price abroad is very high. Perhaps you know of some factory or factories who have a proposition for shipping their boxes knocked down. Would you be kind enough to give us the names of these factories and advise us if in your experience you have come up against a like proposition."

### Further Interest in the Question of Multiple Hook Up

Query No. 71—"Referring to your issue

of February 29, in the 'Requests for Information' column, I notice Inquiry No. 60, a request for information regarding the pros and cons of the multiple hook-up in apartment house work.

"We are very much interested in securing any information you may have on this matter."

### Requests Names of Firms Making Freezing Trays

Query No. 72—"Can you give us the names and addresses of firms who make freezing trays for ice cubes to be used in a household electric refrigerator?"

### Wants to Know What Engineers Have Against Multiple Hook Up

Query No. 73—"Answering your Query No. 60 in February 29 issue of your paper, may I ask to hear from you just how your engineers come out flatly against multiple hook-ups for apartment house installations?"

"With past experience, and several large apartment houses under my supervision, installed with this style hook-up, I may be able to answer your question, if I knew what your engineers hold against it."

"So far we find everything very satisfactory, and the various owners also think the highest of their refrigeration jobs."

"May I hear from you, and exchange views and ideas, pro and con?"

Note: Query No. 60 was received from a subscriber. The above seems to infer that the News is against the multiple hook-up. We have offered no opinion.—Editor.

### Wants to Know About Dry Ice

Query No. 74—"We have enclosed a photo clip from a daily paper showing dry ice and since we have heard quite a few comments on the dry ice subject by various ice companies in our territory, some of whom even go far enough to suggest that within the next six months dry ice will be sold at a lower price than water ice, doing this mostly to discourage the thought of electric refrigeration."

"If you have any information on this and can tell us anything about the future dry ice so far as is known now, we would appreciate receiving it."

### Another Customer for Multiple Hook-Up Information

Query No. 75—"We notice in your issue of ELECTRIC REFRIGERATION NEWS for February 29th, Query No. 60. This refers to the pros and cons of multiple and single unit installation for apartment houses."

"We do not know whether you have the information available, but if you do we would like very much to obtain the same."

### Student Enters a Large Order

Query No. 76—"As a part fulfillment of a course in selling in the Graduate School of Business Administration at the University of \_\_\_\_\_, I am conducting an investigation of the methods of merchandising and marketing connected with the sale of electric refrigerators."

"Some of the topics I intend to discuss are:

- (1) Scientific ideas pertaining to the sale of the product.
- (2) Seasonal variations in the sales, month by month.
- (3) Companies engaged in the manufacture of electric refrigerators.
- (4) Geographical factors affecting the sale of the product.
- (5) Competition in the sale of the product with:
  - (a) Same goods.
  - (b) Different goods.
- (6) Bibliography of the business literature of the business.
- (7) Trade organizations, statistics, etc.
- (8) National distribution.

"I would be very much obliged to you if you would inform me of any issues of your publication which contain any of the above mentioned topics. If you could spare any of these issues I would greatly appreciate it, and if you can't, I will appreciate you telling me where I can obtain the same."

## New Orleans Store Presents the Idea in a Novel Way



Mayer Godchaux Co., Inc., New Orleans, Used This Effective Display in Getting Away From the Usual Presentation of Electric Refrigeration

## SUBSCRIPTION RATE OF THE NEWS TO BE INCREASED APRIL 1

Effective April 1, 1928, the annual subscription rate for **ELECTRIC REFRIGERATION NEWS** will be increased to \$1.50. New subscriptions received on or before April 1 will be accepted at the old rate of \$1.25 per year, or two years for \$2.00.

Note to subscribers: Please bring this notice to the attention of your friends. Upon request, subscription blanks will be furnished for distribution to members of your organization. Manufacturers and distributors are invited to send in lists of dealers. Sample copies of the News will be mailed to all names furnished.

### Present Subscribers May Extend Term at Old Rate

Please note that present subscribers may take advantage of the old rate in effect until April 1 by extending the term of their subscriptions one, two or three years. To extend your subscription one year, send \$1.25, two years \$2.00, three years \$3.00.

Until April 1 group subscriptions will also be accepted at the old rate, namely five for \$5.00, or for any club of more than five at \$1.00 each.

### Rate of \$2.00 Per Year to be Announced Later

According to present plans, the subscription rate of **ELECTRIC REFRIGERATION NEWS** will eventually be increased to at least \$2.00 per year. These advances are necessary owing to the increased size of the paper and in order that the subscription revenue may more nearly cover the cost of postage and other items of expense which are properly chargeable to the circulation department.

## "PLEASE CHANGE MY ADDRESS"

Recent movements of Electric Refrigeration News subscribers as indicated by requests for changes in mailing addresses.

Adams, R. T., from 130 South Arthur, Pocatello, Idaho, to c/o Park Hotel, Twin Falls, Idaho.

Brandon, B. A., from 15 Jefferson Ct. Bldg., Orlando, Fla., to 492 Peachtree St., Atlanta, Ga.

Brummond, Harry M., from 69 Webster St., Oakland, Cal., to 1609 East 32nd St., Oakland, Cal.

Floring, Frank H., from Frigidaire Domestic Elec. Co., 61 Washington St., Newark, N. J., to 12 Brookwood Drive, Maplewood, N. J.

Kline, A. E., from Martin Parry Corp., York, Pa., to York Haven, Pa.

MacWilliam, William, from 604 Central Ave., East Orange, N. Y., to 604 Central Ave., East Orange, N. Y.

McGraw, L. A., from 2049 Vine St., Denver, Colo., to c/o Dinwoodey Furniture Co., Salt Lake City, Utah.

Meyer, George C., from 137 Oakley Ave., Baltimore, Md., to 3301 Gwynns Falls Parkway, Baltimore, Md.

Morton, Alex., from c/o Refrigeration Service, Inc., 281 11th Ave., N. Y., to c/o Refrigeration Service, Inc., 449 West 42nd St., New York, N. Y.

Taylor, J. W., from 410 Park St., Birmingham, Mich., to 2170 E. Jefferson Ave., Detroit, Mich.

Terry, J., from 2727 North Main St., Dayton, Ohio, to 321 Kenwood Ave., Dayton, Ohio.

Tilford, H. D., from 4201 Evergreen Ave., Baltimore, Md., to 517 Longfellow St., Washington, D. C.

Tobin, K. E., from 2736 Buena Vista W., Detroit, Michigan, to 15724 Indiana, Detroit, Michigan.

Wygant, Eugene, from Holland Electric Co., Box 161, Whittier, Calif., to General Elec., Route 2, Puente, Calif.

## NEW BOOKLETS AND LEAFLETS

Direct Advertising of manufacturers received recently.

### Illinois

A portfolio has been received from the Illinois Refrigerator Co., Morrison, Ill., containing a number of individual cards each one of which bears an illustration of one of the automatic refrigerators manufactured by the company and on the reverse side detailed specifications for that particular model. These cards are 8x10 and make it possible for the various models to be viewed side by side as the cards are laid out.

### Herrick

Herrick Refrigerator Catalog No. 38 has been received from the Herrick Refrigerating Co., Waterloo, Ia. In addition to showing the Herrick line of domestic refrigerators, this catalog contains a number of photographs showing various possible arrangements for built-in cabinets. Three pages are devoted to the subject of Herrick cabinets designed especially for electric refrigeration.

### Plympton

From the Plympton Refrigerator Co., Ellwood City, Pa., we have received two pamphlets on the Plympton directed air flow refrigerating sections. These sections are designed to be used in freezer and top cases and are said to induce a nozzle effect at the cold air outlet into the case, setting up a decided air current carrying throughout the length of the case across the bottom and returning across the top. Diagrams are included in the leaflets showing the direction of the current.

### Kelvinator

Kelvinator Corp. has just released a new recipe book concerning a number of tested recipes which have been tried out in the Kelvinator model kitchen. The book, attractive in its bright colors, contains recipes for appetizers, salads, desserts, iced drinks and entrees, and also carries a number of suggestions to the lady of the house in regard to the manner in which best results will be obtained from the use of her Kelvinator.

### Esco

The Eastern Sales Co., refrigeration division, West Chester, Pa., has sent in a booklet on the Esco electric milk cooling cabinet. Cutaway models illustrated show the construction of the cabinet and its appearance with electric refrigeration installed. Two charts which are shown indicate the time required for cooling milk. A page is devoted to three possible methods of cooling milk with the Esco cabinet. A photograph is shown of one of the cabinets equipped with Frigidaire electric refrigeration.

### Tag

C. J. Tagliabue Manufacturing Co., 18-88 33rd St., Brooklyn, N. Y., sends in their leaflet No. 952 illustrating two types of Tags portable recording thermometers. One of these, the self-contained type, has been especially designed for use by manufacturers of electric refrigerators and others requiring an instrument which can be readily shifted from one location to another. The other type called "distant type" is designed for applications where it is desired to have the recording instrument in some location other than that where the temperature is being taken.

### Western Butchers' Supply

The "United" electric refrigerating machine, its manufacture and uses, are described in an 8-page leaflet received from the Western Butchers' Supply Co., 156-160 Fourth St., San Francisco, Calif. Photographs are included showing the various parts which are used in the machine, as well as views of the factory in which these parts are made. Photographs of typical "United" installations, including a dairy and an ice cream plant, are shown.

## THE CONDENSER

### A CLASSIFIED COLUMN OF OPPORTUNITY

REPLIES to box number advertisements should be addressed to Electric Refrigeration News, 554 Maccaabees Bldg., Detroit, Mich.

ADVERTISING RATES—this column only:

POSITIONS WANTED (special rate if paid in advance): 50 words or less, one insertion, \$2.00; additional words 4 cents each. Three insertions, \$5.00.

POSITIONS AVAILABLE, For Sale, Business Opportunities, and all other classifications (special rate, if paid in advance): 50 words or less, one insertion, \$3.00; three insertions \$8.00; additional words, 5 cents each.

LINE RATE (open account): 50 cents per line.

### POSITIONS AVAILABLE

"Wanted, District Sales Representative. Well known manufacturer with complete line of domestic and commercial electric refrigeration has an interesting opening in the south and southeast. Applicant must have a successful record of selling major appliances to central stations and dealers. Experience in refrigeration is not as essential as ability to prove past productivity and a large central station following. Reply must be in detail to secure consideration. Address Box No. 66."

Would like to get in touch with a refrigerating engineer to complete an idea on electric refrigeration. Electric Refrigeration News, Box No. 68.

We are now manufacturing gas ranges and are anxious to add electric refrigerators for domestic use to our line. Are therefore looking for high class man capable of handling, designing, manufacturing and selling on a profit sharing basis. No money required. O'Keefe & Merritt Co., 2700 Mines Avenue, Los Angeles, Calif.

### POSITIONS WANTED

ENGINEERING EXECUTIVE, connected with electric refrigeration for ten years, desires connection with responsible manufacturer in temporary or permanent capacity as consulting or chief engineer. Capable of taking complete charge of engineering and manufacturing. Inventor and owner of widely used patents. Well acquainted with patent situation. Box 52.

### Refrigeration Engineering

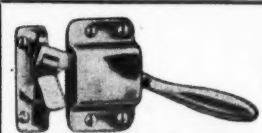
Specialists in household machines, having rotary pumps. Reports on water cooler development. H. R. VAN DEVENTER, INC. CONSULTING ENGINEERS 342 Madison Avenue New York City

### Refrigeration Patents

Over 20 Years' Experience as a Specialist in Electric Refrigeration H. R. Van Deventer SOLICITOR OF PATENTS 342 Madison Avenue, New York City

## Reliable CORKBOARD

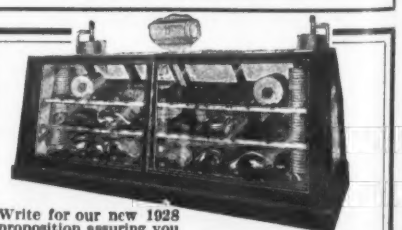
Manufactured by Luse-Stevenson Co. 307 N. Mich. Ave., Chicago



Distinctive Refrigeration Hardware PATENTED TRIPLOCK Winters & Crampton Mfg. Co., Grand Rapids, Mich.

### DISPLAY FOODS

Endorsed By General Electric Co. Copeland Sales Co. Trutliffe Wax Products Co. 27 Erie St., Milwaukee, Wis.



Write for our new 1928 proposition assuring you MORE AND BIGGER SALES with Thesco Display Fixtures THE C. SCHMIDT COMPANY John and Livingston Streets THE HOME OF THESCO PRODUCTS Cincinnati, Ohio

## An Outstanding Sales Feature for REFRIGERATORS



E. J. WIRFS ORGANIZATION, Inc. 135 S. 17th St., St. Louis, Mo.

## Subscription Order

ELECTRIC REFRIGERATION NEWS, 554 MACCABEES BUILDING, DETROIT, MICH.

Please enter my subscription to Electric Refrigeration News.

United States: ☐ \$1.25 per year ☐ Two years for \$2.00.

Foreign Countries: ☐ \$1.50 per year.

I am enclosing payment in the form of

☐ Check ☐ P. O. Order ☐ Cash ☐ Stamps

Name \_\_\_\_\_

Street Address \_\_\_\_\_

City and State \_\_\_\_\_

Remarks: \_\_\_\_\_

IMPORTANT NOTICE—This offer holds good only until April 1, 1928. After that the subscription rate will be \$1.50 per year or three years for \$3.

FOREIGN: After April first, the rate for all countries other than the United States and possessions will be \$2 per year or three years for \$5.

RENEWALS: Old subscribers may extend the period of their subscription at the old rate until April first. If you use this coupon for renewing or extending your subscription, please indicate by checking this square ☐ so that the possibility of duplication may be avoided.



ELECTRIC REFRIGERATION NEWS

The business newspaper of the electric refrigeration industry

VOL. 2, No. 15, SERIAL No. 39 DETROIT, MICHIGAN, MARCH 28, 1928 Entered as second class matter August 1, 1927, at the Post Office, Detroit, Michigan. PRICE TEN CENTS

COLORED CABINETS NOW BEING OFFERED BY MOST COMPANIES

New Lines of Equipment for 1928 Season Featured in This Issue

As previously announced, this issue of the NEWS has been selected for a comprehensive presentation of the new lines of equipment offered by the leading manufacturers for the 1928 season. In this feature section, which starts on page 17, will be found a brief summary of the principal improvements and changes in design of machines, cabinets and accessories. The Electric Refrigeration Directory which appeared in the "Catalogue and Directory Number," Jan. 4, is republished in this issue with additions and corrections. Every manufacturer known to be actively engaged in this field is listed. Merchandising experience, news stories, comments on problems of the industry and other important articles in this issue are listed below:

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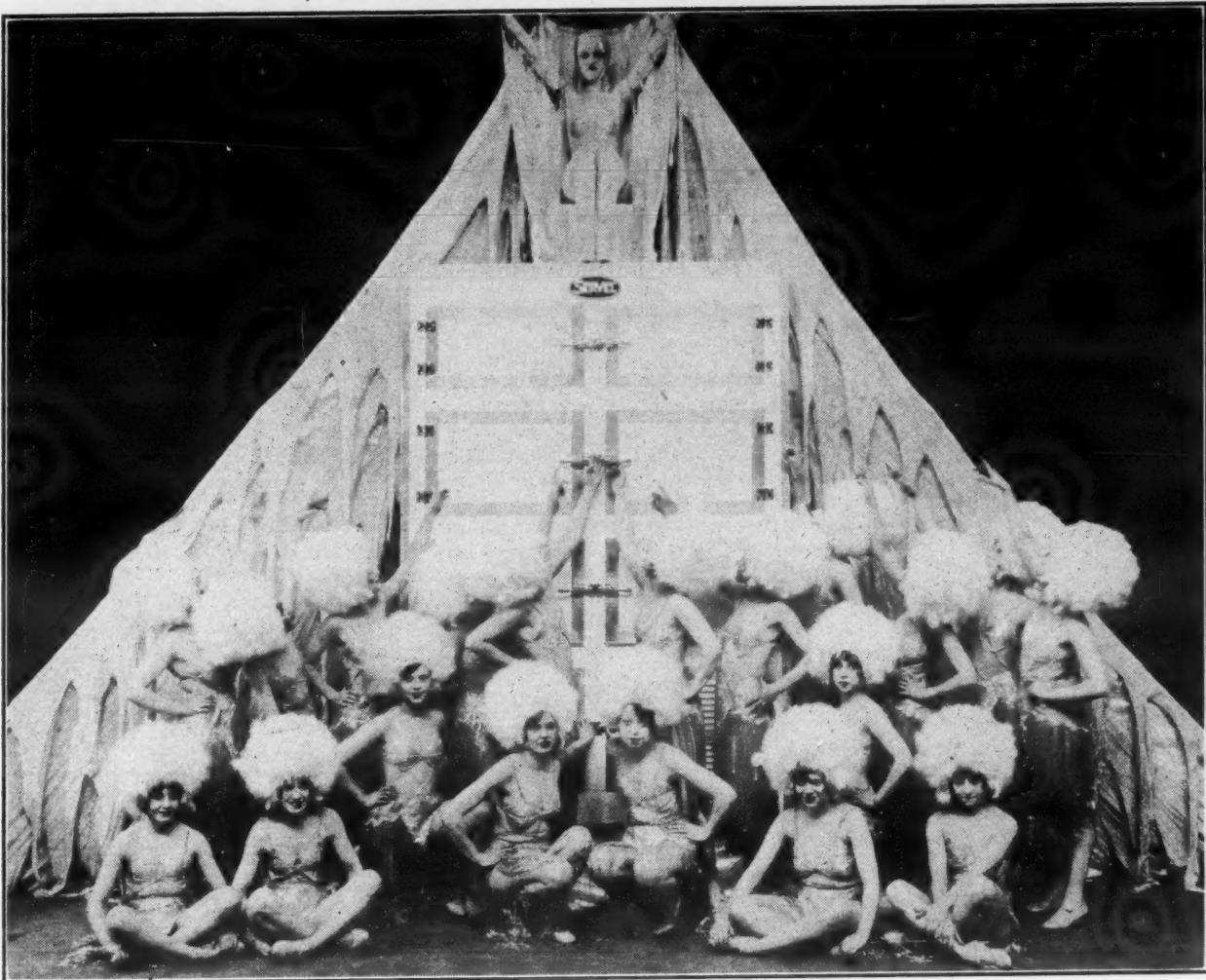
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Spectacular Publicity for Electric Refrigeration



Thousands of people attending the fifth edition of Earl Carroll's Vanities at the Illinois Theatre, Chicago, are "educated" to the merits of electric refrigeration (or something) when the "Servel Sweeties" sing "Cool 'em off"

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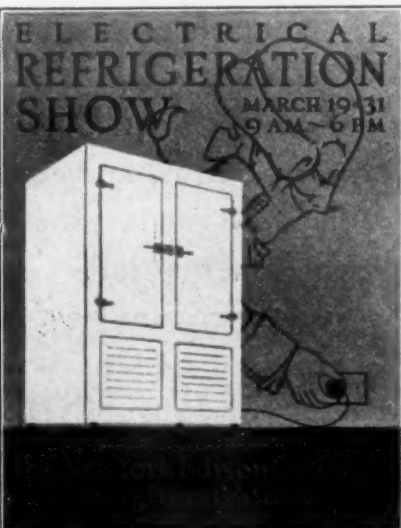
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EXHIBITION POSTER



Display card used by New York Edison Co. to advertise annual electric refrigeration show

NEW YORK A.S.R.E. DEVOTES SESSION TO HOUSEHOLD MACHINE

Reception and Dinner Meeting Followed by Visit to New York Edison Exhibition

The need for greater co-operation among all branches of the refrigeration industry as a means of solving common problems and to promote the public's appreciation of the service, was emphasized by several speakers at the annual "Ladies' Night" reception and dinner meeting of the New York Section of the American Society of Refrigerating Engineers held at the Machinery Club, 50 Church St., New York City, Wednesday evening, March 21. Prominent refrigerating engineers and representatives of the leading manufacturers of household equipment were in attendance at the meeting, one of the most successful which has been held under the leadership of Stephen Bennis, president of the New York section.

Numerous references were made to the work of pioneers in the field whose early efforts made possible the remarkable growth of the electric refrigeration industry which has taken place during the past few years. Engineers are still confronted with many problems in meeting the varied requirements for electric refrigeration service. Greater freedom in the interchange of technical knowledge, market data and production statistics will react to the advantage of all concerned and speed up the industry's progress. Complete confidence in the future growth of electric refrigeration was repeatedly expressed and it was pointed out that the development of the household machine has materially benefited the older branches of refrigeration, including the ice companies and the manufacturers of heavy machinery.

Colonel Frank E. Smith, president of Servel, Inc., the first speaker of the evening, drew a parallel between the problems and opportunities of the automobile and electric refrigeration industries. He paid tribute to the constructive work which has been done by the American Society of Automotive Engineers, whose co-operative efforts made it possible for the industry to expand rapidly and on sound engineering lines. He called attention to the tremendous benefits which have resulted from organized effort in promoting good roads and without which the enormous production of cars would never have been achieved. Colonel Smith particularly emphasized the value of the automobile industry's service policy, namely, that of requiring the customer to stand the cost of service after the 90-day adjustment period. Colonel Smith's address is reported in full on page 3.

Frigidaire Man Makes Plea for Co-operation

C. M. Eakin, general manager of the Domestic Electric Co., distributors of Delco-Light and Frigidaire products in the New York metropolitan area, speaking on behalf of the older companies in the field, expressed a welcome to the younger organizations and also a hope that newcomers would profit by the experience which has already been gained. Mr. Eakin listed several specific directions in which the industry has made marked progress during the past year. There is greater co-operation among dealers, he said, advertising is on a higher plane, and there is less destructive price cutting. Cabinets now being sold are better constructed and better insulated. The new vogue of color has stimulated public interest and a greater variety of uses for electric refrigeration service have been developed. A forward step was taken with the passage of the New York City code on refrigeration. The new code, Mr. Eakin believes, is working out satisfactorily and has met with general approval. Among the problems which concern everyone in the business and which call for co-operative effort, Mr. Eakin called attention to a mysterious bill recently introduced into the New York legislature by Senator Williams and Assemblyman Kline which would, if passed, put everybody out of business. (The bill referred to will be found on page 4 of this issue.) Mr. Eakin closed by urging a united effort in providing a better food preservation service to the public.

John C. Cassidy, sales manager of the Kelvinator Company of New York, presented a picture of the tremendous growth which has taken place in the electric refrigeration industry and the still greater market which lies ahead. As an example of the rapid expansion which has taken place, he pointed out that the Kelvinator Company sold more machines during 1927 than in all previous years put together.

R. R. Thompson, general sales manager of refrigeration, Welsbach Co., gave an interesting summary of the past history of electric refrigeration development. His remarks are published in full on page 5.

C. H. Nichols, general power agent of the New York Edison Co., extended an

(Continued on page 2)



## NEW YORK A. S. R. E. DEVOTES SESSION TO HOUSEHOLD MACHINE

(Concluded from Page 1, Column 5)

invitation to the members and visitors to attend the electric refrigeration exhibition of the New York Edison Co., at Irving Place and 15th St.

F. M. Cockrell, editor of *ELECTRIC REFRIGERATION NEWS*, called attention to the educational program which has been sponsored by the Refrigeration Committee of the National Electric Light Association. This program is designed to "sell the idea" rather than any particular make of machine. Leading public utility companies in all parts of the country are showing an active interest in the plan, which calls for a considerable expenditure of money by the central stations for local newspaper and direct-by-mail advertising. Central station relations have complicated the sales manager's problem, Mr. Cockrell said, but their interest in the machine will be an effective aid in promoting and stabilizing the market.

E. R. Diggs, president of E. R. Diggs Co., investment bankers, gave an interesting account of his study of public utility financing which finally led to an active interest in the affairs of the ice industry. He predicted a great future for the ice business and called attention to factors which are stimulating its growth. The advertising of electric refrigerator manufacturers has promoted a public understanding of the need for refrigeration and has greatly extended the market. An important development now taking place is the transfer of ice companies from the hands of private families to control by well organized corporations, managed by high grade business men.

W. F. Grupe, chief engineer of the Cork Import Co., outlined the specifications of an ideal cabinet for electric refrigeration. Mr. Grupe's paper will be published in a later issue of *ELECTRIC REFRIGERATION NEWS*.

After the meeting at the Machinery Club, members and guests were taken in buses provided by the New York Edison Co. to view the exhibition of the latest styles and designs in household electric refrigerators at the Edison Show Rooms, Irving Place and 15th St. A buffet luncheon was served by the New York Edison Co. Color models were much in evidence in the exhibition which included equipment manufactured by practically all companies actively engaged in the manufacture of household machines.

## SOLID CARBONIC CO. ERECTING NEW CARBON DIOXIDE ICE PLANT

On or about April 1 the Solid Carbonic Co., Ltd., 100 E. 42nd St., New York City, will enter the market with a supply of solidified carbon dioxide which it is planned will be sufficient to satisfactorily and economically serve the needs of the users of this type of refrigerator.

The Solid Carbonic Co. is affiliated with the Eastern Alcohol Corp., a jointly owned subsidiary of E. I. du Pont de Nemours & Co. and the National Distillers Corp. This affiliation, it is announced, assures an abundance of pure carbon dioxide for solidification purposes. Construction of buildings and manufacturing facilities with a capacity of 50 tons daily is now under way in New Jersey, on property adjacent to the Eastern Alcohol plant.

The new manufacturing plant of the Solid Carbonic Co., Ltd., is the first unit, it is claimed, ever to be built solely for the production of solidified carbon dioxide. It is being constructed by the Du Pont Engineering Co. Distribution organizations for the finished product will be maintained in New York, Philadelphia, Baltimore and other large eastern cities.

## LEONARD SETS NEW RECORD FOR SINGLE DAY'S SHIPMENTS

The Leonard Refrigerator Co., Grand Rapids, Mich., shipped 3,782 Leonard refrigerators in a solid train of 43 cars over the Pennsylvania railroad to dealers at various points throughout the United States, Canada and Mexico on February 29, according to J. E. Chamberlain, traffic manager. This is a record day's shipment for the Leonard company, though the average for the past five days has been 20 cars per day.

More than 900 men are now engaged in building Leonard refrigerators in the 26-acre plant at Grand Rapids, and night shifts are being used in many departments. This is particularly true of the porcelain department which for three months past has been working day and night.

## Poplar Bluff, Mo., Frigidaire Dealer Entertains Church Organization

The Ladies of the Poplar Bluff, Mo., Methodist Missionary Society enjoyed a lecture and Frigidaire demonstration given by Mrs. T. H. Vinyard at the Frigidaire sales office on South Main St., February 18. Approximately 35 guests were present. As the result of the attendance the organization was presented with a gift of \$10. After the lecture refreshments were served.

## Associated Gas & Electric Co. Sold 454 Refrigerators in 1927

Electric Refrigeration Department Organized to Develop Business More Aggressively in the Future

RECENT additions to the territory served by the Associated Gas & Electric Co., 33 Liberty St., New York City, brings the total number of residential meters connected to the company's lines to 268,374. A report showing the sales of electric refrigerators during 1927, however, is based on only a portion of the entire territory having a total of 143,413 residential meters. Four hundred and fifty domestic machines and 4 commercial units were placed by the company in these districts.

Sales operating divisions with the total number of residential meters each, are shown below.

	Residential Meters	Refrigeration Units
New York—		
Central .....	28,047	28
Eastern .....	9,319	22
Harlem Valley .....	9,777	38
Staten Island .....	33,100	249
Cambridge .....	22,808	6
Cape & Vineyard .....	9,918	73
Portsmouth Power .....	6,604	12
Kentucky-Tennessee .....	18,600	27

Recent announcement has been made of the appointment of W. D. Guy, formerly in charge of the educational department of Kelvinator, Inc., manager of the refrigeration department of the Association Gas & Electric Co. B. M. Fast is general new business manager and F. H. Smock is assistant general new business manager of the company.

New business managers and others who attended the new business convention of the company, held in New York recently, were as follows:

J. M. Chapman, new business manager, Kentucky-Tennessee Light & Power Co., Bowling Green, Ky.

J. R. English, new business manager, Penn Electric Co., Johnstown, Pa.

E. B. Conboy, new business manager, Western New York Gas & Electric, Lancaster, N. Y.

R. W. Bradshaw, refrigeration engineer, Western New York Gas & Electric Co., Lancaster, N. Y.

H. H. Bank, new business supervisor, New York State Gas & Electric Co., Ithaca, N. Y.

A. R. Ewing, new business supervisor, New York State Gas & Electric Co., Oneonta, N. Y.

H. Dawson, refrigeration engineer, New York State Gas & Electric Co., Oneonta, N. Y.

J. Laver, new business supervisor, Plattsburgh Gas & Electric Co., Plattsburgh, N. Y.

W. G. Rhodes, new business manager, Harlem Valley Electric Corp., Brewster, N. Y.

P. Crowe, refrigeration engineer, Harlem Valley Electric Corp., Brewster, N. Y.

W. G. Burrill, new business manager, Staten Island Edison Corp., St. George, S. I.

C. Adams, refrigeration engineer, Staten Island Edison Corp., St. George, S. I.

H. U. Greene, superintendent, Cambridge Electric Co., Cambridge, Mass.

W. G. Keay, division new business manager, Cambridge Gas Co., Cambridge, Mass.

R. M. Miller, sales manager, Cambridge Electric Co., Cambridge, Mass.

J. Sumner, sales manager, Cambridge Gas Co., Cambridge, Mass.

K. M. Weidaw, assistant sales manager, Cambridge Gas Co., Cambridge, Mass.

F. W. Rendall, new business manager, New Hampshire Gas & Electric Co., Portsmouth, N. H.

G. E. Stephen, sales manager, Worcester Gas Light Co., Worcester, Mass.

A. V. Padon, assistant sales manager, Worcester Gas Light Co., Worcester, Mass.

W. E. Mange, superintendent, Cape & Vineyard Electric Co., Falmouth, Mass.

J. I. Farrell, sales manager, Cape & Vineyard Electric Co., Falmouth, Mass.

M. H. Golden, sales manager, Yarmouth Electric Light & Power Co., Yarmouth, N. S.

Miss R. Carlington, home service supervisor, New York State Gas & Electric Co., Oneonta, N. Y.

Miss H. Farlow, home service supervisor, Staten Island Edison Corp., St. George, Staten Island, N. Y.

E. F. Wilson, statistician, Associated Gas & Electric Co., 33 Liberty St., New York City.

## CISCO HOME UTILITIES APPOINTS NEW DEALERS

W. N. Moss, manager of Cisco Home Utilities, Inc., 616 South Fifth St., Louisville, Ky., distributors for Copeland and Seeger, also for oil-heating equipment and electrical appliances, announces the appointment of the following new dealers:

W. H. Anger, Madison, Ind.

Paul L. Routt, Lawrenceburg, Ky.

United Home Furnishing Co., Spring St., Jeffersonville, Ind.

Means Electric Co., 207 So. Virginia St., Hopkinsville, Ky.

P. A. Blackwell & Co., Henderson, Ky.

Gene Gilbert, 220 W. Third St., Owensboro, Ky.

Gas & Electric Shop, Louisville, Ky.

W. R. Beeler, 217 E. Market St., New Albany, N. Y.

Smith Outfitting Co., 107-109 S. Main St., Salem, Ind.

## Detroit Real Estate Men Visit Frigidaire Plant

Thirty members of the property management division of the Detroit Real Estate Board were guests of Frigidaire Corp. at Dayton, on March 15. This body, which represents the owners of 500 apartment houses in Detroit, is headed by Carl S. Wells, chairman of the division, and H. T. Clough, executive secretary of the real estate board. The trip was arranged through the Detroit Frigidaire branch.

## Oil Burner Association to Meet At Chicago in April

The fifth annual American Oil Burner Association convention and exposition will be held at the Hotel Stephens, Chicago, April 3, 4 and 5.

## DALLAS G. E. DISTRIBUTOR MOVES TO LARGER QUARTERS

A. C. Rogers, Dallas General Electric distributor, is in new quarters at the corner of Federal and St. Paul streets. Though located since last fall at 3209 Knox street the rapid growth of his business and the necessity of expanding his sales force necessitated Mr. Rogers' seeking a larger business home. The new quarters provide display space, offices and rooms for the salesmen. Plenty of parking space is available in the new location and Mr. Rogers plans to keep the display rooms open each evening until 9 o'clock.

Mr. Rogers opened his business last fall as distributor and dealer for the General Electric refrigerator, moving to Dallas from McKinney, Texas. He is distributor for 44 counties in North and East Texas, and states that in February he sold 200 per cent of his quota. W. S. Moody is sales manager for the organization.



## An Announcement

TWO new heat insulated rooms have recently been built by E. T. L. for the Refrigerator Test Department. These, fitted with complete equipment for the control and measurement of temperature, are now available to the industry at large.

Apparatus has been provided to reach and maintain any room temperature from 20° F. to 120° F. Electrical input and interior temperature variations of the refrigerator itself are recorded automatically and graphically.

Tests may be conducted for days at a time, if necessary, and a continuous performance record kept.

Equipment is available to reproduce the effect of warm food being placed in the refrigerator at intervals.

Final reports are issued in a form which permits of easy interpretation and comparison with other published data.

Know—  
by Test

Electrical Testing Laboratories

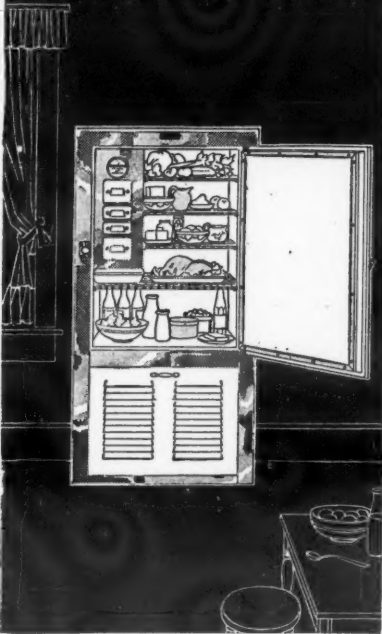
80th Street and East End Ave.

New York N.Y.

Thirty years in the Service of the Electrical Industry

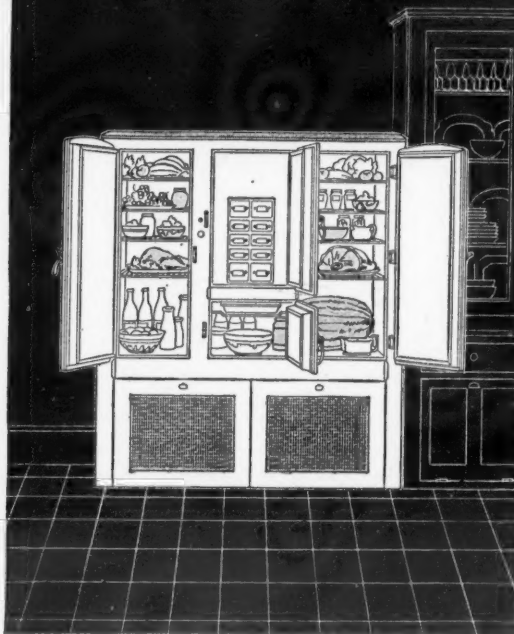
# Copeland

## DEPENDABLE



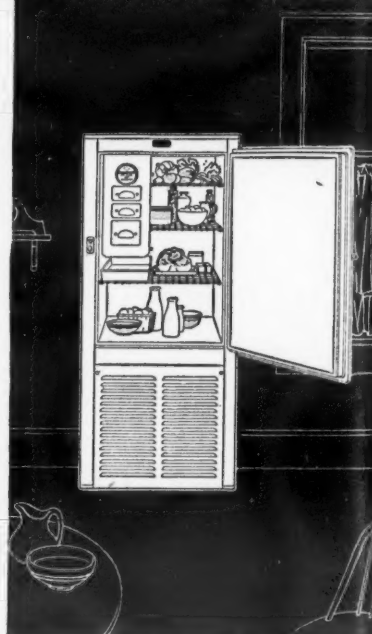
Model N-7-P—7 cu. ft. food storage; 11½ sq. ft. shelf space; 162 ice cubes. 10.6 lbs. of ice. Porcelain interior

## ELECTRIC



Color De Luxe Model 20—20 cu. ft. food storage; 30 sq. ft. shelf space; 378 ice cubes. 24.5 lbs. of ice. All-Porcelain. 6 optional colors

## REFRIGERATION



Model N-5—5 cu. ft. food storage; 6¼ sq. ft. shelf space; 108 ice cubes. 6.95 lbs. of ice. Lacquer finish on steel

## Newer, larger line—optional colors—greater sales

With the addition of De Luxe models in six optional color combinations, the Copeland line of dependable electric refrigeration offers still greater opportunities for profit!

32 models in all—including separate units for installation in present ice boxes; complete electric refrigerators for every type and size of home; multiple installations for apartment houses; and also commercial units. The new Color-De Luxe models, electrically lighted and equipped with cathedral-top doors and satin-finished special hardware, are the last word in luxurious refrigeration. They are available in small cabinets as well as large; and some of them are capable of 378 ice cubes, or 24.5 pounds of ice at one freezing! Don't pass up this chance to learn more about Copeland and the profit-making possibilities of the Copeland line. The information is free and does not obligate you. Write or wire us today, or use the attached coupon.

MAIL THIS COUPON  
Copeland, 630 Lyncaste Ave., Detroit, Mich. I am interested in learning more about the 1928 Copeland franchise.

Name \_\_\_\_\_ Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_



# Compares Problems of Automotive and Electric Refrigeration Industries

## Public Should Be Educated to Pay for Service — Cooperation Needed to Promote Progress

An Address by Colonel Frank E. Smith, President of Servel, Inc., Before the New York Section, American Society of Refrigerating Engineers, at the Machinery Club, New York City, March 21, 1928

I feel particularly honored in being with you tonight, because I am a newcomer in the refrigeration industry, although I am somewhat embarrassed when I realize that so many of my audience are refrigeration experts. As a newcomer in the field of mechanical refrigeration, I quite naturally view the situation in this industry through the glasses of my experience in other lines, particularly in the automotive field. From my viewpoint there is a close analogy between the automobile and the mechanical refrigerator.

### Close Analogy Between Automobile and Refrigerator

The stepping stone of progress that marked the beginning of the automobile industry was the application of the internal combustion engine to the ordinary buggy. Internal combustion engines were known. Buggies were known. It was the combination of these two by Elwood Hayes, John Maxwell and Edgar Apperson, that gave birth to the automobile and started the new mammoth automotive industry.

The beginning of the era of mechanical refrigeration, and when I speak of mechanical refrigeration I mean the field of household and small commercial refrigeration, was the application of the small mechanical refrigerating unit to the old ice box. The old ice box was the buggy; the cake of ice was the horse; and the mechanical refrigerator machine was the gas engine.

Ice boxes were old and refrigerating machines were old, both so old that history has difficulty in tracing them—but the real application of the small machine to the ice box is not very old; just as the application of the gas engine to the buggy is not very old.

As to who should have the credit for establishing "popular refrigeration," it is difficult to say. The important time is just before the World War of 1914. Such names as Joy, Williams, Kramer, and Wolf stand out for this period. These and others were the pioneers of popular refrigeration.

Just as it was natural for the buggy manufacturers to develop the automobile, so it was the ice box manufacturers who first took up and attempted to popularize "domestic refrigeration." Both of these products embody a "chassis," in which is installed a propelling power plant. Naturally, the development of these products should be parallel, but although the automobile industry has developed rapidly and systematically, the development of mechanical refrigeration has been slow.

Today's automobile has been evolved over a period of 30 years, by constant study and application of engineering principles and refinements and a great part of the credit for the accomplishment is due the members of the Society of Automotive Engineers, individually and collectively.

The mechanical refrigerator has not developed in an engineering way as fast as might have been expected and the highest degree of perfection in its design has not been achieved.

A great part of the burden of the mechanical refrigeration industry rests upon the shoulders of the membership of the American Society of Refrigerating Engineers and upon your efforts as individuals and when banded together as a society, depends the progress which your industry makes in an engineering way.

### Industry Progress Retarded by Lack of Co-operation

There has not been thus far the co-operation either between engineers or between companies, which would permit of an exchange of information, that would result in adequate progress for the industry as a whole.

The automobile companies originally combined together in the Selden patent suit against Henry Ford, and ultimately realizing the strength of their combined facilities and brain power and by the cross licensing of patents and the exchange of statistical information, through the medium of the National Automobile Chamber of Commerce, the automobile industry has grown to its present size and power.

In the mechanical refrigeration field there is a dearth of information as to the results of laboratory tests, as to statistical data on production and sales and service, and thus far there has been no worthwhile association of manufacturers, who could act as a clearing house for information, for the benefit of the membership, and for the betterment and stabilization of the industry as a whole.

The automobile is a highly developed piece of machinery, and like any piece of machinery, it requires a certain amount of attention during the period in which it is being put into service and while various minor adjustments are being made to improve its operation.

### Automobile Industry Renders Free Service only During Adjustment Period

From the outset of the automobile business it was realized that during such adjustment period—which was arbitrarily set and agreed upon between the manufacturers as 90 days—that the manufacturers'

dealers should render such adjustment service *gratis* to the buyer.

Thus it has become standard practice for automobile owners to expect to pay, and they do pay, for *any* and *all* service, which they receive subsequent to this initial 90-day free service, or subsequent to what might be termed the "adjustment" period.

In the mechanical refrigeration field, some companies in the race to get business have gone so far as to guarantee a highly developed and sensitive piece of machinery for a period of two years, and have agreed to render *free* service for such a period to the buyer.

There has also been a tendency toward rushing into campaigns of advertising and sales promotion and the pushing out of product not sufficiently well engineered and not properly seasoned by careful laboratory tests, to even approach the exaggerated claims made for same, to the public.

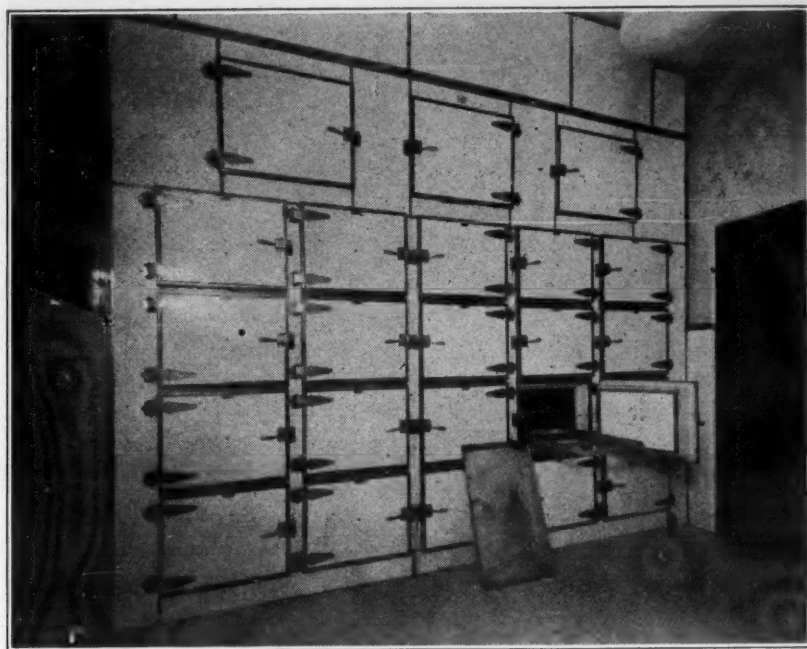
Exaggeration and quantity have, in other words, taken the place of *conservatism* and *quality* in many instances, with the consequent serious loss of prestige and money, not only by the manufacturers at fault, but by the whole mechanical refrigeration industry as well.

The net result of such a policy has been to create a feeling of instability, not only in minds of the public, but among members of the mechanical refrigeration industry itself, until at certain periods last year it seemed as though everyone contacted, whether in or out of the industry, was in the frame of mind of the man who, after a very hilarious, but trying, anti-Volstead New Year's Eve party, found himself in bed the next day with a splitting headache, a nasty taste and a terrific thirst, when a slight noise causing him to turn his head doorwards, he beheld a small beribboned kitten purring merrily, with arched back, pushing the door open gently and daintily, stepping inquisitively and carefully into his chamber, whereupon he exclaimed, in disgust: "You would come in here *shouting* and *stamping* your feet!"

There is unquestionably a great improve-

(Concluded on Page 24)

## Maltese Cats and Collie Dogs Keep Perfectly in this Seeger



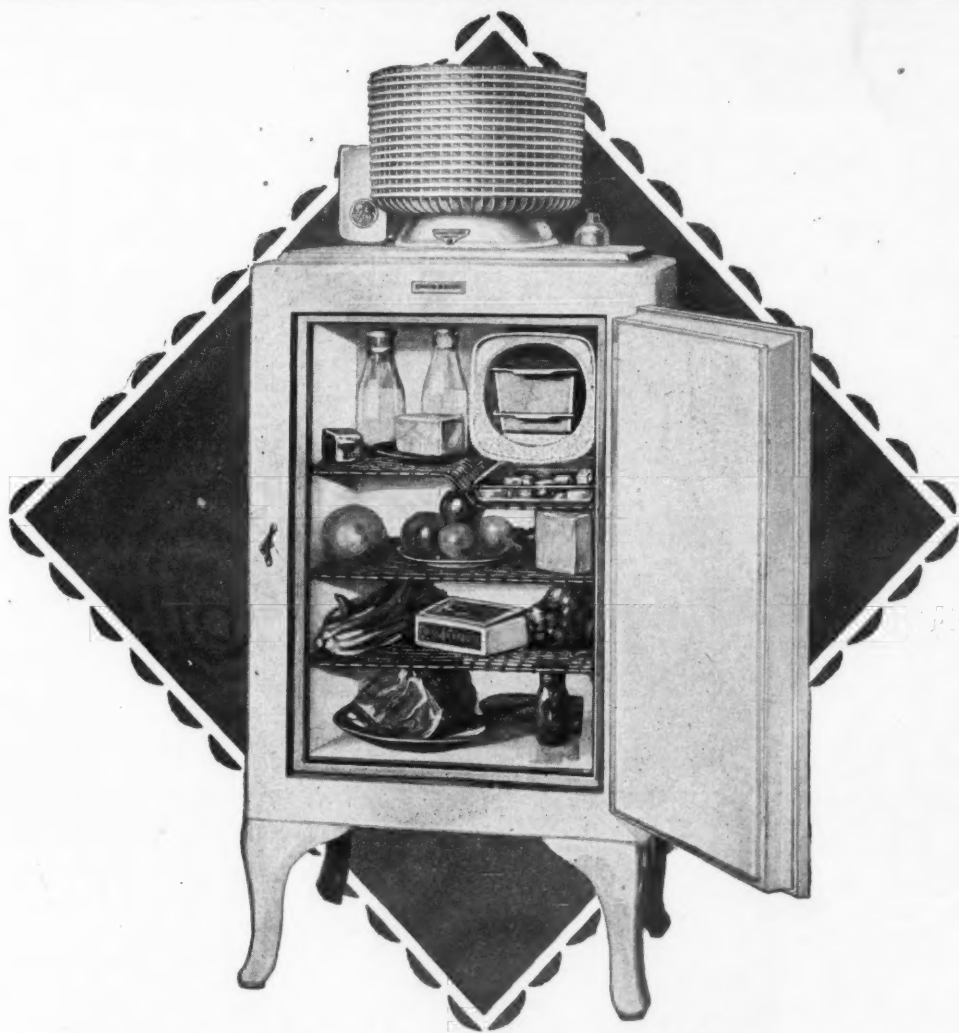
One of two mortuary refrigerators of the A. S. P. C. A.

When it comes to unusual installations, this Seeger refrigerator installed by the special construction department of the Seeger Refrigeration Sales Corp., New York City, in the New York home of the American Society for Prevention of Cruelty to Animals, must be placed near the head of the list.

This is a mortuary refrigerator for cats and dogs, and is designed to take anything from a Maltese kitten to a full grown Collie dog. It is finished on the interior and exterior with porcelain and all trim-

ming is of nickel silver. The cats and dogs are kept well chilled by a battery of Frigidaire coils located in the top of the cabinet and to which access may be had through the three doors which can be seen in the photograph.

The capacity of this refrigerator is 20 animals, each one having its own individual chamber. In addition to this unit, the Society has a second one designed to accommodate 16 animals, making a total capacity in the two cabinets of 36 occupants.



## Installation a matter of minutes ... servicing virtually eliminated

THE engineers of General Electric were careful to design a refrigerator that would require the least possible time for installation and servicing by the dealer.

When delivering a General Electric Refrigerator, the dealer merely puts it in place, lowers the unit into the top of the cabinet (with a special one-man crane) plugs it into an electric outlet ... and he's through.

All the machinery, plus a permanent supply of oil, is enclosed in one hermetically sealed casing of steel. It is thoroughly tested and retested before it leaves the factory.

If, by any chance, difficulties should develop, the dealer merely ships the entire unit back to the factory and receives a new one—without charge. He has no repairs to make, no responsibility.

GENERAL  ELECTRIC  
**Refrigerator**

ELECTRIC REFRIGERATION DEPARTMENT • OF GENERAL ELECTRIC COMPANY • HANNA BUILDING • CLEVELAND, OHIO

for thirty-five years

manufacturers of

## Finishing Materials

for the

### Refrigeration Industry

Our technical knowledge gained by long years of intimate contact with the refrigeration industry is available to high-grade manufacturers. This is an integral part of our service—really as important to you as the high quality of our product.

It will pay you to have us check over your finishing cost figures. Call, phone, or write

**BRADLEY - HURTZ  
COMPANY**

Successors Industrial Division Bradley & Vrooman Co.

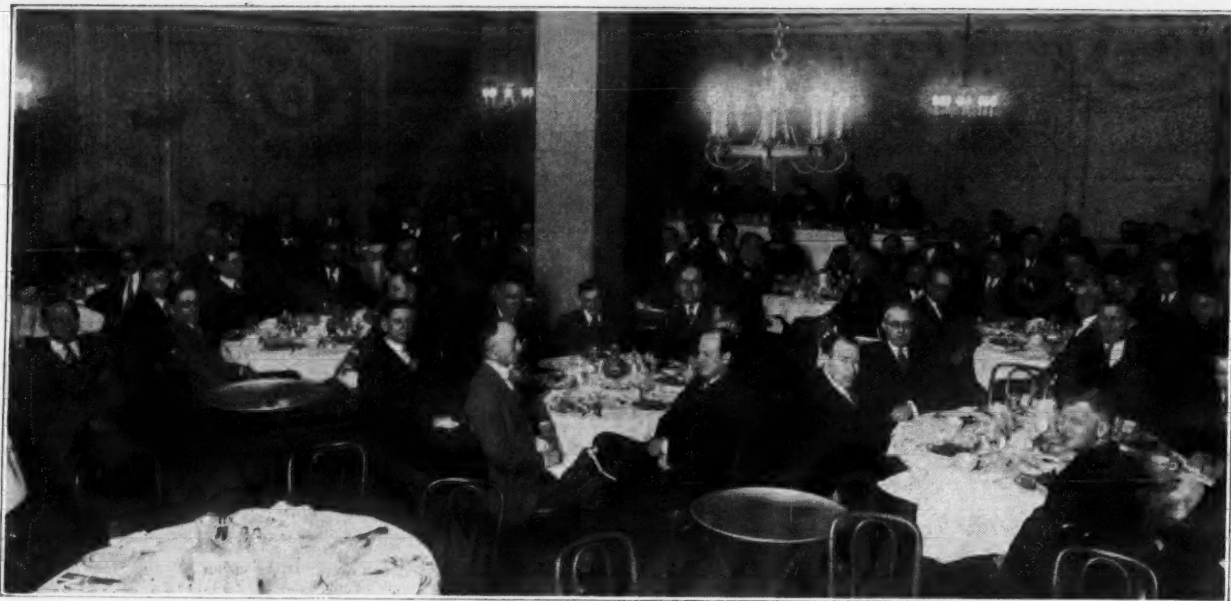
2626 SO. DEARBORN ST.

CHICAGO, ILLINOIS





## Spring Sales Discussed by General Electric Dealers at Toledo Conference



Dealers, members of the organization and officials of the General Electric Co. attended the spring sales meeting of the W. G. Nagel Supply Division of the Lake States General Electric Supply Co., held at Toledo, Ohio, February 14.

The meeting, which included an afternoon and evening session, was held for the purpose of reviewing the activity of the organization for the past year and to plan the spring campaign.

E. E. Merritt, chairman, opened the afternoon meeting and was followed by W. G. Nagel, Jr. Officials of the electric refrigeration department of General Electric Co. present were: W. M. Timmerman, who spoke on the G. E. icing unit; L. R. Edwards, advertising manager, discussed advertising plans for the present year, and R. H. Ferguson, who addressed them on organization and sales training.

One of the features of the afternoon meeting was a sales demonstration, in which Mrs. E. E. Merritt performed in the role of Mrs. Prospect, J. L. Davis as Mr. Prospect and C. J. Gillespie as the salesman.

The evening session was a dinner meeting, opened by W. G. Nagel, Jr., as toastmaster. P. B. Zimmerman, sales manager, General Electric Co., then addressed them on "Building for the Future Today." He was followed by C. L. Proctor, vice-president and general manager, Toledo Edison Co., who gave the "Public Utility Viewpoint on Refrigeration." A. C. Mayer, General Electric Co., closed the meeting as he stated that "It Can Be Done."

## Would Prohibit Noxious Refrigerants

An atmosphere thicker than a London fog has surrounded a proposed amendment to the public health law introduced into the New York state legislature on February 28. Both Senator H. D. Williams, who introduced the bill (No. 1323, Int. 1158) into the Senate, and Assemblyman Kline, who introduced the bill (No. 1709, Int. 150) into the assembly, have refused to divulge the name of the originator.

The first provision of the bill is obviously aimed at certain chemicals widely used by leading manufacturers. The second provision would eliminate the direct method of refrigeration completely, regardless of refrigerant or design of machine. It is quite evident from the provisions that the bill was not sponsored by any manufacturer of equipment.

Investigation by ELECTRIC REFRIGERATION NEWS has revealed the fact that the bill, while carelessly drawn and probably impossible of enforcement, was instigated with serious intent by an individual who is bitterly opposed to the use of certain refrigerants and methods of installation from a safety standpoint.

It is understood that copies of this bill have been forwarded to the legislature of every state in the union, and it is therefore quite possible that similar enactments will be attempted elsewhere. Following is a copy of the document:

### STATE OF NEW YORK

No. 1323 Int. 1158

### IN SENATE

February 28, 1928.

Introduced by Mr. H. D. WILLIAMS—read twice and ordered printed, and when printed to be committed to the Committee on Public Health.

### AN ACT

To Amend the Public Health Law, in Relation to Refrigerants

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

Section 1. Chapter forty-nine of the laws of

nineteen hundred and nine, entitled "An act in relation to the public health, constituting chapter forty-five of the consolidated laws," is hereby amended by inserting therein, in place of article seventeen thereof repealed by chapter one hundred and ten of the laws of nineteen hundred and seventeen, a new article seventeen, to read as follows:

### ARTICLE 17

### Refrigerants

Section 340. Restrictions on the use of refrigerants.

Section 341. When direct method of refrigeration authorized.

Section 342. Penalties.

Section 342-a. Enforcement of article.

Section 343. Application of article.

§ 340. Restrictions on the use of refrigerants. The use of poisonous, noxious, irritant or hydrocarbon refrigerant in any dwelling house, two or more family house or multi-family apartment building, or apartment hotels is hereby prohibited, but this provision shall not apply to a refrigerating system that is hermetically sealed throughout, equipped with fused metal joints, and containing not more than two pounds of refrigerant. No refrigerant shall be used as a brine.

§ 341. When direct method of refrigeration authorized. The direct method of refrigeration shall not be used in any building above the first floor, except in buildings used exclusively for ice making or refrigerating purposes, or both.

§ 342. Penalties. Any person or corporation or officer thereof violating any of the provisions of this article shall be guilty of a misdemeanor. The conviction of any corporation shall not relieve any officer or officers, agent or employees of such corporation from prosecution under the provisions of this article.

§ 342-a. Enforcement of article. It shall be the duty of the state commissioner of health to enforce the provisions of this article, and for such purpose may adopt appropriate rules and regulations. Any person violating, disobeying or disregarding such rules or any lawful notice, order or regulation prescribed by the state commissioner of health in respect to the enforcement of this article shall be liable to the people of the state for a civil penalty of fifty dollars for every such violation. Such penalty may be recovered by an action brought by the state commissioner of health in any court of competent jurisdiction.

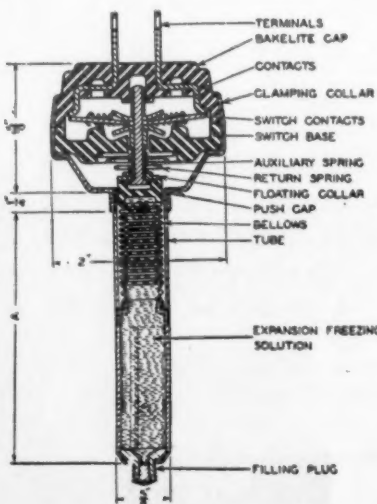
§ 343. Application of article. The provisions of this article shall not apply to the city of New York.

§ 2. This act shall take effect July first, nineteen hundred and twenty-eight.



## "RANCO"

## THERMOSTAT CONTROLS



Have many points of superiority

- (1) Permanently adjusted.
- (2) Can be mounted in small space.
- (3) Will operate in any position.
- (4) Unaffected by vibration.
- (5) Easy to install.
- (6) Never needs calibrating.
- (7) Fool-proof—can be installed or serviced by an inexperienced person.
- (8) Reduces service calls to practically nothing.

Write for Bulletin

THE AUTOMATIC RECLOSING CIRCUIT BREAKER CO.

1304 WESLEY AVE.

COLUMBUS, OHIO

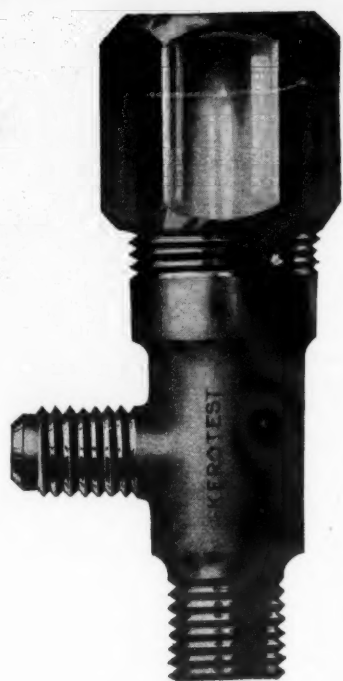


U.S. PAT. OFF.

## FORGED BRASS VALVES

### MASTERS OF THE SITUATION

It is no longer necessary to use double shut-off valves simply to eliminate leakage! KEROTEST originated the style of seal cap now proving popular. Forged brass and properly packed by valve specialists. Angle valves are smaller, less expensive and highly efficient.



KEROTEST MANUFACTURING CO.  
PITTSBURGH, PA.



## To the mind of the average woman

THE Low-Pressure operation of Welsbach Refrigeration has a powerful appeal to the mind of the average woman.

She quickly grasps the idea of a system functioning at low pressure—at ease, without the racking strains of high pressure.

It is the correct basis for a service which operates quietly, efficiently and without difficulties.

Just as logically, it is a system requiring a minimum of expense for electric current.

Confidence of this sort is made all the stronger by the beauty of the Welsbach Cabinet and by her knowledge of the Welsbach Company.

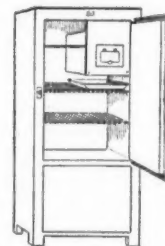
Ever since she was a girl, this average woman has respected Welsbach as a manufacturer whose products could be trusted. Now that Welsbach has entered the field of refrigeration and created a new and revolutionary refrigerating system,

it must be right!

She can see tangible evidence of the Welsbach pride-in-accomplishment by the appearance of the Cabinet. Smooth, clean-lined, corners rounded without need for beading or strip of any sort; a lower panel uncured by louver openings; the Welsbach Nitro-Lacquer finish of velvet smoothness; thick cork insulation continuing complete around corners; a one-piece steel construction;—all these things are evidence of the reliability she is so certain of finding.

To Distributor-Dealers and Central Stations, the ability of the average woman to grasp the exclusive Welsbach advantages, plus her long-established confidence in the name, is of inestimable advantage.

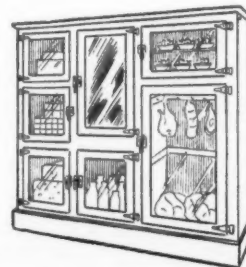
Franchises for certain territories are being arranged for now. For information, address Refrigeration Division, Welsbach Company, 307 Ellis St., Gloucester City, N. J.



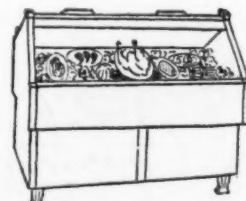
Model C-155, new low price model. Ample capacity for the modest home. Well adapted to apartment house use.



Model C-280, one of five standard self-contained models. Fully rounded corners without stripping or trim. Interior of full porcelain with sanitary rounded corners. Finished in Welsbach white or gray Nitro-Lacquer.



Welsbach is ideal for restaurants, groceries, delicatessen stores, florists, butcher shops, etc.



Welsbach systems are available for display and freezer cases of all types.

# Welsbach

## LOW PRESSURE REFRIGERATION



# Pioneers Faced Many Problems in Developing a Satisfactory Machine

## Greatest Progress Has Resulted From Adherence to Conservative Principles

An address by R. R. Thompson, General Sales Manager of Refrigeration, Welsbach Company, before the New York Section, American Society of Refrigerating Engineers at the Machinery Club, New York City, March 21, 1928

I AM DEEPLY grateful for this opportunity of saying just a few words in review of the small-unit refrigeration industry. Many of the members here and others are engaged in producing and marketing machines that are to us of gigantic capacity and I have often wondered as to just their frame of mind toward this lusty, yet somewhat petulant, stepchild that has come into the picture in recent years. Of late, the situation has been somewhat clarified because it is becoming better known that small-unit refrigeration is not a competitor of the large machine or of the ice industry—rather, it has been most stimulating to that end of the business.

Any industry must show progress or die. I am happy to confirm that which you already know, namely, that small-unit refrigeration has shown a most encouraging progress from the first. But our way has not been easy. I think I can safely say that no one knows that better than I, because, in being fortunate enough to choose this as my life's work, I have, in the past fifteen years, put in more intensive effort, more night and day work; I have had more headaches and heartaches, and I have had more real thrills of accomplishment and satisfaction than is given to the ordinary human being to experience in a lifetime. And my experience has been the common experience of all of us.

### Lured On By Potential Market

It is a matter of great satisfaction to me to go back and review the early days—to go back, say, fifteen years to when Fred Wolfe and E. T. Williams and Mr. Mel-lows and those other pioneers to whom we owe so much, were still struggling with their first problems, were working days and nights in laboratories with their shops under adverse conditions, and with chemical, mechanical and electrical problems of a difficult nature. Encountering the discouragements that they did, it was fortunate that they were always lured by the picture of the enormous potentiality of the waiting market, the millions upon millions of wired homes and stores, the great benefit to mankind which proper food preservation would bring, and the knowledge that the American public are always eagerly receptive to new devices which contribute to their health, convenience and well-being.

I could sketch for you the discouraging nature of the early attempts to manufacture and commercialize these little devices because, at times, we used to sit back and feel, because we were too close to the picture, a certain wonder if there wasn't something infernal about the combination of elements we had brought together and wonder why our problems would not yield to the effort we were putting on them. But perseverance and technical progress at last began to bring a result and gradually the curve of sales crept up and up, set back although it was by the war, until we emerged to the point some three years ago when the industry took on a slightly different aspect.

Previous to this time capital had been cautiously awaiting the arrival of the day when these appliances had become sufficiently practical to warrant the investment of large sums of money in them, and we saw at that time the belief of these interests that that day had arrived. New companies sprang into being, old ones were refinanced and enlarged. Specialty selling methods were put to work moving the merchandise in large quantities, and the sales curve jumped at an alarming rate. I say "alarming" because it had been known to those few men who have carried through in this industry since its inception that small-unit refrigeration from a technical and production standpoint requires a conservative, rather than a spectacular, progression. The natural result was that certain of the interests who did not heed the warning of those who knew by experience suffered set-backs.

Now, I fully believe that this situation, which has caused some adverse criticism and comment, was to be expected. I believe it was merely the manifestation of progressive economic laws which brought about this condition. I believe that the recovery you have seen has been a marvelous one and that, because the lesson has been so well learned, the future will prove that we are by the rocks and that the river is not rapid water but clear sailing. Surely the technical progress which the last two years has seen is indication of the truth of this belief. Think of the thousands upon thousands of small-unit refrigerators that are today operating consistently, economically and without the necessity for burdensome service in the homes and stores of America. Think of what an advance this is over the devices that we installed just a few years ago, each time with a prayer that it would keep on freezing until we at least got back to the office. And when we were back, we used to sit and hold our breath and wonder if it would get lonesome and kick up a fuss and that an irate customer would phone to say "You'll have to come and take this thing out."

Progress, yes, indeed, progress. Progress of a most satisfying nature. But may I direct your particular attention to the fact that progress has been followed in every instance after conservatism came into the picture.

Progress followed common sense, sensi-

ble caution in design, in manufacture, in inspection, in marketing and in installation. Today we understand our problems much better than before, but if we are to enjoy the volume of business, the saturation of product, the dollars of profit that are potentially ours, we must adhere to those sound conservative principles which have and have alone been responsible for our forward steps and the violation of which have been accountable for the time the industry has slipped back.

Every day the situation grows brighter. Every day we find greater consumer acceptance, more satisfied customers, new applications for the devices, and every day sound conservative effort brings a greater reward.

For my part, and speaking for my co-laborers in this work, we are all content that we are engaged in a most interesting, a most gripping, a most financially potential field of endeavor, and that we are encouraged and enthusiastic to carry on, for surely we serve a great human need, and surely the past casts a wonderful reflection for the accomplishments to come.

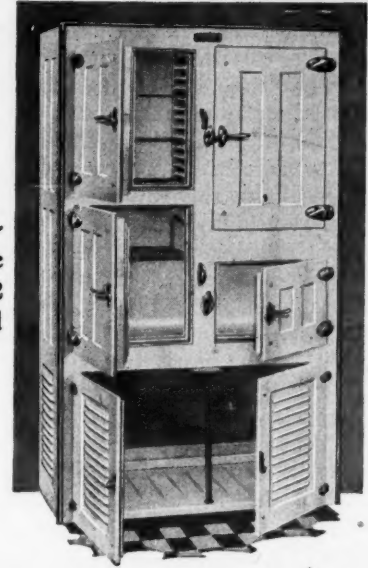
### New Greenville, S. C. Frigidaire Distributor Appointed

The agency for Frigidaire in Greenville County, S. C., has been given the Geer Refrigerating Co., Greenville, headed by Kenneth M. Geer. Quarters have been secured in the Walker Building, on West Washington St., in that city. D. L. Brock, factory representative, helped the new company in the organization of its work.

### G. E. Appoints Lyons, Kans., Dealer

Crawford & Miller Co., Lyons, Kan., have been appointed General Electric dealers for Lyons and surrounding territory.

## BOHN SYPHON REFRIGERATORS



Beautiful, Distinctive. Can be had in 7, 9 and 12 cubic foot net food storage capacity.

White Porcelain Enamel inside and outside. The machine compartment is ideal for storage space where remote installation is made.

### For Electric Refrigeration

Write for Full Particulars

## Bohn Refrigerator Company

SAINT PAUL, MINNESOTA

These Models are on Display at our own Stores in

NEW YORK  
5 E. 46th St.

CHICAGO  
227 No. Michigan Blvd.

BOSTON  
707-709 Boylston St.

**The life of a refrigerator is only as long as the life of the materials of which it is built. That is one of the many reasons why the best-selling makes of refrigerators are Monel Metal trimmed.**

LEADING manufacturers of refrigerators are using Monel Metal trim because:

- 1 It is permanently bright and attractive.
- 2 It is easy to keep clean because of its rust-immunity and corrosion-resistance.

Model C-5-P Copeland Refrigerator trimmed with Monel Metal. Manufactured by the COPELAND SALES CO. of Detroit, Mich.

- 3 Its steel-like strength makes it hard to dent or scratch.
- 4 Its surface never shows signs of wear—it has no coating to wear off.
- 5 Its general good looks and ornamental value enhance appearance and salability.
- 6 It is being advertised to American housewives thru leading national magazines.

SEND FOR "LIST B" OF MONEL METAL AND NICKEL LITERATURE

# MONEL METAL

THE INTERNATIONAL NICKEL COMPANY (INC.)



67 WALL STREET, NEW YORK, N. Y.



## Wirfs Gasket

assures

## Electrical Refrigeration Efficiency

An electrical unit can only be as efficient as the box in which it is installed. Poor door contacts on wood or metal boxes mean that any unit will have to operate a greater number of hours to maintain an efficient refrigeration temperature. This means added operating cost.

## Wirfs PATENTED "AIRTITE" Gasket

Keeps the cold air in and the warm air out and maintains the proper zone of refrigeration with fewer operating hours. Wide awake dealers have found that it usually clinches the sale. Most manufacturers supply boxes equipped with Wirfs; write us for their names and a sample.

E. J. WIRFS ORGANIZATION, Inc., 135 S. 17th St., St. Louis, Mo.



## Put the Plan into Effect

Says G. B. Richardson, Chairman, Refrigeration Committee, Commercial National Section, N. E. L. A.

Those of us who have labored together to devise a working plan of merchandising electrical refrigeration will feel amply repaid for our efforts if the plan is put into immediate practical effect. It has taken the co-operation of a number of men and organizations to draw up the sales program, and it will require yet further co-operation to make that program vital.

Particularly would I cite the valuable assistance given by the Society for Electrical Development. The staff and facilities of the Society were placed at the disposal of the N. E. L. A. Refrigeration Committee, thereby materially accelerating its work. Others, too, have given liberally of their time to the cause of increased refrigeration sales.

The way to cash in on the work that has been done is for every central station commercial executive to adopt the plan and put it into immediate effect in his own territory. There is no good reason for holding back. There is every good reason for taking initiative in this direction.—G. B. Richardson.

Additional replies from Central Stations received in answer to questions asked by Electric Refrigeration News. Received too late for publication in March 14 issue.

## Justified in Spending First Year's Revenue But Should Get Results with Lesser Amount

Letter—"The first question as to the amount the central stations can invest to secure the added load is one upon which there is a great difference of opinion among utility men. We find one class of utility organizations favoring the idea that they can afford to spend their first year's revenue to secure the new business load, while others feel that the merchandising department should be entirely self-supporting.

"While I believe that we would be justified in spending the first year's revenue, I do not believe that on a properly conducted basis this will be necessary. The business should be secured on a basis which shows 25% or 30% of the first year's revenue being all that is required to secure it.

"Concerning the domestic customers who are immediate prospects, I think to state that 10% in this class is being rather optimistic. I would feel that 7½% is nearer correct. Of course, that is largely dependent on the amount of sales effort exerted by the manufacturers, central stations and dealers. To consider 10% immediate prospects would possibly mean spending more than the first year's revenue to secure it. For that reason we feel that more time for education is the practical course to follow. This will produce a good volume of business without prohibitive cost to secure it.

"We are studying the plan as outlined by the Committee and we hope to follow it pretty closely in our 1928 activities."

B. M. Fast, new business manager, Associated Gas & Electric System, New York City.

## Plan Would Require Commonwealth Edison to Spend \$250,000—Work of Committee Commended

Letter—"The average annual revenue for domestic electric refrigerators referred to in your telegram is too high a figure for Chicago. Figuring the number of units we sold last year, the first year's income would not cover our advertising expenses.

"We believe possibly one per cent of our total number of customers would be immediate prospects. In order to reach this number it would be necessary to circularize 10 per cent of our customers as stated by the Refrigeration Committee of the N. E. L. A. This expenditure would amount to \$250,000.00.

"As you probably know we have direct contact with all of our customers through our monthly paper known as the 'Edison Service News' where we carry twelve articles per year on electric refrigeration. In addition we are interested in two broadcasting stations. We are doing a considerable amount of lecturing and home demonstration. We carry cards in street cars, do billboard advertising, have weekly ads in newspapers; also put out 1,100 billboard posters during 1927.

"It seems to me that the neutral direct-by-mail advertising matter should be handled by the Electric Association of Chicago. Practically all other lines have representations in the Electric Association. The refrigerator people have been notified, but up to the present time no definite information has been received from them in regard to joining the Association.

"We are contemplating using some direct-by-mail advertising, and are heartily in accord with the plan outlined by the N. E. L. A. Committee, and we will give them our support as far as possible. I believe this committee has done an excellent job, they deserve recognition. I further believe their material will do much to hasten the general adoption of household electric refrigerators."

O. R. Hogue, head lighting agent, Commonwealth Edison Co., Chicago, Ill.

## Pacific Gas & Electric Avoids Local Competition—New Rate Makes Every Customer a Prospect

Telegram—"We do no direct selling of refrigerators. Our company policy is where dealer or refrigerator representative satisfactorily covers the field on refrigerator sales and service we stay out of direct competition and co-operate with him. An extremely satisfactory condition exists in territory we serve resulting from this co-operation. Twelve thousand dollars devoted to co-operative helps and advertising in nineteen twenty-eight budget. Twelve thousand refrigerators should be sold to our customers this year. New electric rates effective April first make every one of our three hundred and seventy thousand customers a refrigerator prospect. Maximum yearly cost of operation to addition to lights on basis of six hundred kilowatt hour consumption per year twenty-one dollars. Customers using seven dollars or more monthly enjoy same refrigeration service for nine dollars per year. If we can tie in with advertising plan suggested by committees it will be done."

R. T. Stephens, manager electric sales, Pacific Gas and Electric Co., San Francisco.



W. D. Guy

Heads Refrigeration Department of Associated Gas & Electric Co.

W. D. Guy, formerly in charge of the educational department of Kelvinator, Inc., has recently assumed charge of a newly organized refrigeration department of the Associated Gas & Electric Co., with headquarters at 33 Liberty St., New York City.

Takes Frigidaire Agency in Camden, Arkansas

C. M. Haynes, who for twenty-two years has conducted one of the most successful insurance agencies in Camden, Ark., has taken the agency for Delco and Frigidaire equipment. Mr. Haynes will maintain a showroom and offices in the Ouachita Hotel Bldg.

AMERICA'S MOST BEAUTIFUL REFRIGERATOR



MODEL G-1

Rhinelander Airtite Refrigerators are built to accommodate any Standard Electric Unit. These cabinets sell easily because they combine correct construction with rare beauty. Write for prices and information on how you can increase your sales and profits by handling Rhinelander Airtites.

Rhinelander Refrigerator Co., Rhinelander, Wis.



Dealers who have seen actual proofs of Servel's 1928 color advertising in national magazines, pronounce the campaign one of the most effective on electric refrigeration they have ever seen.

## ... and when your customers see these

YOUR selling job gets off to a running start.

Double pages in color in the Saturday Evening Post, April 21, and the May Good Housekeeping, tell the story of the modern Servel—its new, low prices; its modern design; its luxurious new colors. They tell, too, about the simple refrigerating unit, which solves the servicing problem. And we direct the readers to see Servel for themselves. Over 4,500,000 copies of these great national publications will carry

this announcement—just the first of Servel's schedule of 1928 color advertising. You'll want to add something to what we've said. You'll want to say, in your newspaper advertising, "Read about Servel in the Post this week; then see it at our store." Newspaper mats of such an advertisement are ready for you. Three sizes: 5 columns by 15"; 4 columns by 12" and 3 columns by 9"—each with plenty of space to display your own signature.

Other newspaper advertising help is ready for you, too. For proofs, and for copies of the new series of full-color folders, display material, etc., write our Advertising Department at Evansville, Indiana.

**SERVEL SALES, Inc.**

Factory and General Offices: Evansville, Indiana  
Administrative Offices: 51 E. 42nd St., New York

CHICAGO  
DALLAS  
DENVER



LOS ANGELES  
OAKLAND  
SEATTLE





## SERVICE DEPARTMENT IS THE WEAK LINK IN MERCHANDISING CHAIN

**Frigidaire Prepared by Delco Light Experience**

That the service department is the weak link in the merchandising chain and that the problem of strengthening this important link is one of the major questions in many lines of industry, including electric refrigeration, is the contention of E. T. Cunningham, president of E. T. Cunningham, Inc., manufacturers of radio tubes, in a recent issue of *Printers' Ink*.

"Two fundamental principles have governed the solution of the difficulties in our field," says Mr. Cunningham. "The first is the manufacturer minimizing the need for service on his product. The second is the building up of service quality through trade education, chiefly among dealers."

### Service Department Should Pay

Mr. Cunningham cites the attitude of the average dealer who looks upon servicing as mean, complicated and unprofitable work, and who fails to put in a service department because of the capital required and because he is afraid to charge high enough prices to make the department pay for itself.

With no service department or one inadequately equipped, the dealer is unable to properly handle the difficulties of his customer when they arise, and as a result the store loses a friend instead of turning that friend into a booster for his product.

Further in regard to this problem, Mr. Cunningham says, "You cannot standardize human nature and so the problem of servicing must be got at slowly. New industries, such as radio and electric refrigeration, have the past experience of such a progressive and prominent industry as the automobile industry to guide them. Ten years ago you could get really good motor car service only in a few cities, but now you find it in any place you arrive, because automobile manufacturers have educated the man in the sales through schools and other agencies. In electrical refrigeration, Frigidaire has been able to get the jump because it had the nucleus of an efficient servicing organization in its Delco Light force. Agents who had sold Delco and serviced it were available for the new product."

### Must Overcome Dealer Antagonism

"But even here I had an experience which shows how difficult it is to solve servicing problems. When I recently had two refrigeration units installed in new houses, the men who put them in damaged my floors and walls. Then the machines ran noisily. When I phoned them about the trouble, they gave me very quick service but they could not eliminate the noise. Still the electrical refrigerator manufacturers have been working long and hard on the servicing problem."

"The point to be drawn from this personal incident is that every manufacturer has a great deal of human nature to handle in his task of creating good service facilities. He must first overcome a tremendous dealer antagonism toward repair work by showing the merchant that servicing offers a business building opportunity. He must also overcome dealer ignorance of the product and the fear of servicing through education."

## COPELAND ADDS THIRTY-FIVE NEW DEALERS

Thirty-five new dealers have just been added to the list of firms handling Copeland electric refrigerators, it is announced by W. D. McElhinny, vice-president in charge of sales. These include: Suburban Gas Corporation, Hyannis, Mass.; O. W. Coons, Mt. Sterling, Ky.; Hentzschel's, Baltimore, Md.; Stanley P. Twomey, Van Nuys, Calif.; H. E. Longley, Wilmington, N. C.; South Side Auto Supply Co., St. Louis; Frank A. Knowles, Fitzgerald, Ga.; G. E. McQuatters, Ontario, Calif.; Greer Furniture Co., Bowling Green, Ky.; R. E. Moore, Madisonville, Ky.; Princeton Furniture & Undertaking Co., Princeton, Ky.; Radio Service Co., Charleston, Wash.; Ceigler's Hardware, Oneida, N. Y.; Vincent Barstow Co., Cleveland, Ohio; East End Cycle Co., Middleton, Ohio; Young & Chaffee Furniture Co., Grand Rapids, Mich.; Amundson Hardware Co., Sunnyside, Wash.; Dohrman Hotel, Seattle, Wash.; Southern Oregon Electric Co., Medford, Ore.; Worstell & Thornhill, Kellogg, Idaho; Mayor Electric Co., Philadelphia, Miss.; Summer Battery Co., Columbia, Miss.; Allen & Barry, Water Valley, Miss.; Central Battery Co., Laurel, Miss.; Evans Battery Co., Tupelo, Miss.; Dewey Jones, Corinth, Miss.; A. M. Jordan Garage, West Point, Miss.; W. C. Oberschmidt, Brookhaven, Miss.; T. C. McCown, Richmond, Ky.; H. M. Dingsley, Hastings, Neb.; Leichman & Leete, Bishop, Calif.; Osman & Williams, Bakersfield, Calif.; A. R. Hancock Electric Store, Orville, Calif.; Landrum & Ellis, Columbus, Miss.; Cecil Heim, Meridian, Miss.

## Ice Cream Industry Started From Experiments of a Baltimore Merchant, 77 Years Ago

**Dealer Hit Upon Idea of Freezing Milk to Prevent Spoilage of Surplus.  
Government Report Said New Delicacy Was Eaten in  
Fun, Not as a Food**

By Frank I. Weller

THREE quarters of a century ago Jacob Fussell, a Baltimore milk merchant, started in fun an industry that has become a giant of American commerce—the present \$650,000,000 wholesale ice cream business.

Fussell's milk enterprise suffered reverses in the form of limited outlet in 1851, and to solve the problem of surplus storage he hit upon the idea of freezing it. Immediately a multitude of possibilities arose, including the development of a popular delicacy when sugar and flavoring were added to the milk.

How well the theory succeeded is revealed in a tattered government report of that day, which sets forth that "ice cream is eaten in fun and not as a food." The luxury retailed at 60 cents a quart.

By 1856 demand for ice cream had so increased that a factory was put into operation in Washington. The machinery was

simple. A single "freezer," attached to a drive-wheel that provided power for rotation, was the entire equipment. When a factory was erected in 1862 in Boston, orders for ice cream had come to American manufacturers from England, India and Brazil. Western cities awoke to the

possibilities and a factory was opened in St. Louis after an initial outlay of \$500 for rights to the carefully guarded formula.

Artificial refrigeration, discovered by a German in 1867, is credited directly for the first great commercial opportunity in the wholesale manufacture of ice cream, an industry that consumed four and a half billion pounds of milk in 1926 and poured thousands of dollars into the dairymen's pockets.

Federal figures place the total production of ice cream at 324,665,000 gallons in the same year. Estimates for 1927 have not been compiled, but it is believed they will show an even higher production. There are approximately 5,000 factories in the United States supplying a vast multitude of retailers, whose sales, added together and divided by the number of dealers from the roadside vendor to the owner of city "fountains," average 1.8 gallons a day for each merchant.

In 1926 more than 88 per cent of the ice cream was sold in bulk, and the remainder in brick and similar forms. Confectioners sold 30.25 per cent of all the ice cream retailed; grocers, 18.95; drug stores, 16.3; roadside stands, 10.16; hotels and restaurants, 7.99; cigar stores, 3.5, and unclassified, 13.3 per cent.

Vanilla was the predominating flavor, constituting 55.48 per cent of all sales. Chocolate was second at 10.00 per cent;

strawberry comprised 7.82 per cent, and all other flavors, 26.64 per cent.

The rapid rise of the ice cream industry is credited in part to the complete change of attitude toward the "delicacy eaten in fun" 77 years ago. Ice cream, by constant study and experiment, has become a valuable food, of which total solids, including fats and other nutriment, amount to 36 per cent of any given quantity sold by the average manufacturer.

## OMAHA MAN TELLS OF SALES PLANS BOTH GOOD AND BAD

"Refrigerator Sales Methods, Some That Work and Some That Won't," is the subject of an article by R. R. Farquhar, in charge of the electric refrigeration department of Milton Rogers & Sons Co., Omaha, Nebr., as told in the April issue of *Electrical Dealer*.

Mr. Farquhar, who was for ten years in the retail clothing business, started in with this Omaha hardware store refrigeration department last June. He tried a number of different plans to promote the sale of electric refrigeration and tells of his various successes and failures in the article mentioned.

# SAVAGE MERCURY REFRIGERATION

THE PREFERENCE OF PARTICULAR ICE  
CREAM MANUFACTURERS, BECAUSE—

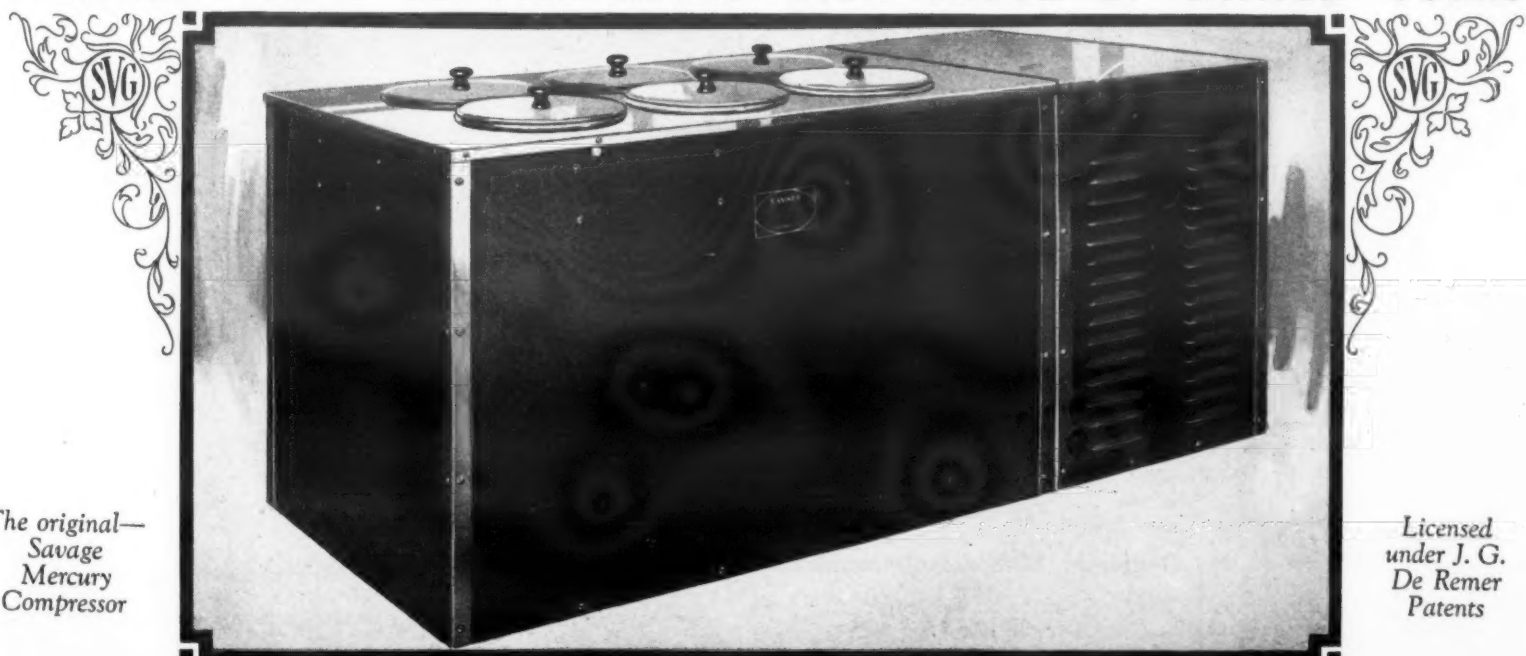
- 1—Savage means lower cabinet cost.
- 2—Savage means less service.
- 3—Savage means lower depreciation.
- 4—Savage means quiet, efficient operation.

Please write us and say  
"PROVE IT!"

Sole Manufacturers of Savage Mercury Ice Cream Cabinets  
Licensed Under J. G. De Remer Patents

## SAVAGE MERCURY REFRIGERATION FOR ICE CREAM CABINETS

COMPARE YOUR SERVICE COSTS WITH THOSE OF SAVAGE USERS



The original—  
Savage  
Mercury  
Compressor

Licensed  
under J. G.  
De Remer  
Patents

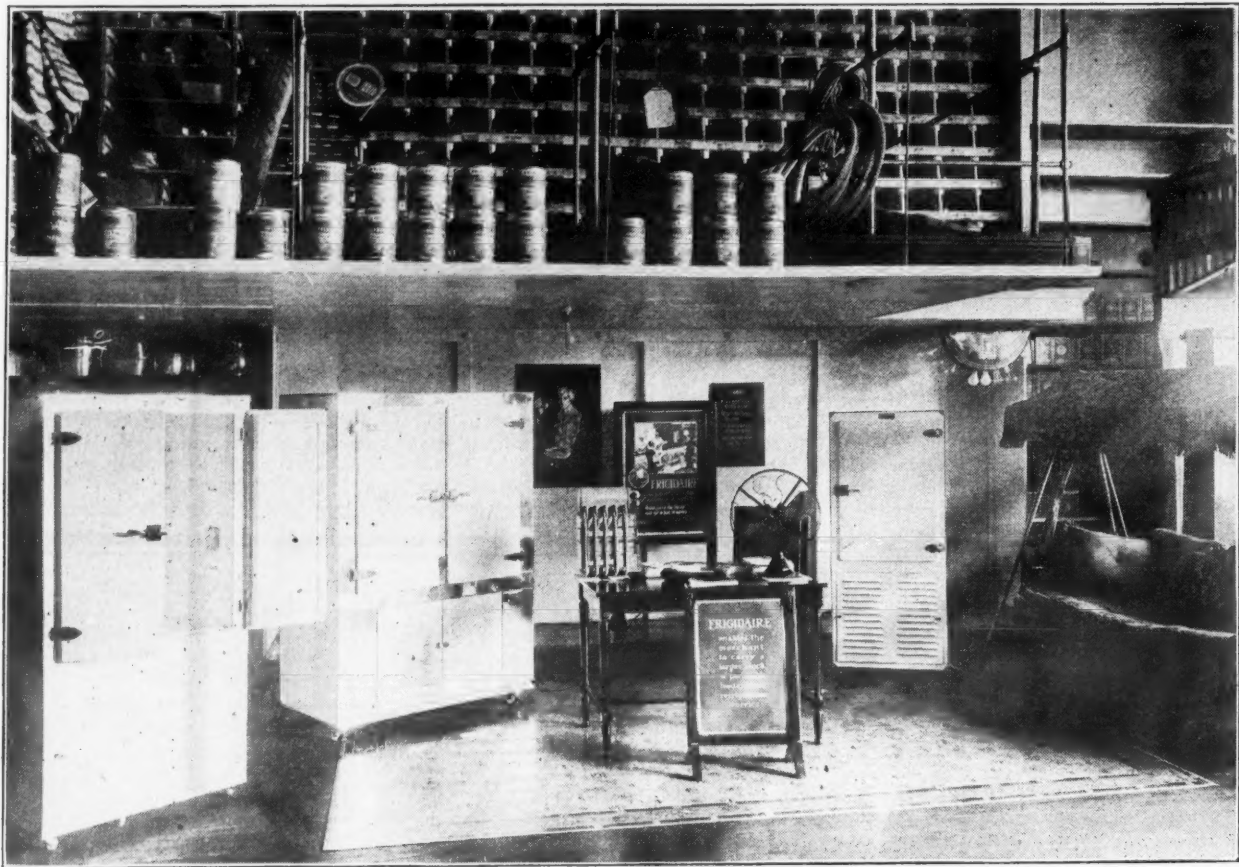
ONE OF THE PRODUCTS OF  
**SAVAGE ARMS CORPORATION** **UTICA**  
NEW YORK



## Electric Refrigerator Sales Add \$100,000 to Income of Georgia Hardware Store in First Twelve Months

Selling Plan Based on Data Obtained by a Survey of All Wired Homes in the Territory of this Dublin, Georgia, Store

By Archie Richardson



Interior view of Stevens Hardware Company store in Dublin, Georgia, a town of about 7,000 people

BACK in the hinterlands the people are building better homes than their fathers ever dreamed of. The old tin bathtub has given way to tiled bathrooms, and the cast iron heating stove that up to a few years ago was regarded as good enough for anybody has been supplanted by a parlor furnace or by a more elaborate hot air, steam or oil heating plant. And to meet the demand for better living conditions, the power companies are pushing their lines out into the small towns and rural sections, thereby creating a demand and market for all the electrical conveniences.

And of all the electrical things these new customers of the power companies are putting on their lines, few surpass in popularity the electric refrigerator. Out their way, ice is expensive, often of poor quality, deliveries, if any, are irregular and unsatisfactory, and it is only natural that they should obey electric machines and forget their refrigeration worries.

A striking example of the opportunities afforded the town and small city store in supplying this newly created demand is found in the experiences of the Stevens Hardware Company, of Dublin, Georgia, who did a one hundred thousand dollar business in refrigerators their first year.

The electric refrigerator was all but unknown in their territory when, late in 1926, the Stevens company obtained the county representation for a well known machine and set themselves to the building of service and sales organizations.

### Tied In with National Advertising

The handicap of selling an expensive refrigerator that was new to most of their customers could, it was decided, be largely overcome through tying in with national advertising and putting the reputation of the manufacturer—one who had the confidence and good will of the people—behind the performance of the machine; and after the first year there would be many of these refrigerators in satisfactory service and the owners could be called on to help dispel any remaining doubt as to their efficiency or economy.

Into the home of every prospective buyer, it was realized, there were going magazines and papers carrying the advertising of the machines they were to sell, and one of the first moves made by the company was to encourage the people to watch for and read these advertisements. This was done through newspaper advertising, personal suggestion, and while showing and demonstrating the refrigerators on the floor of the store.

### Service Department Organized First

At the very outstart, the service department was seen as the most important part of the organization, and it was decided to have this end complete and ready for action before the selling was begun. It was seen as imperative that every machine sold should give entire satisfaction, for the management had learned through long experience in merchandising that the worst liability they could acquire would be a dissatisfied customer, who believed he was not getting what he had paid for, and who took occasion to tell his neighbors of the fact.

The supervision of the service department was given to a member of the firm who had proved his fitness, and he was given three men who were trained by the manufacturer. These men occupied their time in making installations, and putting in the wiring necessary to enable customers to take advantage of the low power rates. It was anticipated that very little of their time would be occupied in actually servicing machines after they were installed, and

a year's experience has proved that the cost of servicing on machines carefully installed is almost a negligible one.

This service department was recognized by the local power company for its efficiency, and later when the power company began the selling of refrigerators, arrangements were made with the Stevens company to handle the servicing of machines sold by both companies.

On completion of plans for installing and servicing, the sales department, under the direction of H. C. Thorpe, secretary-treasurer of the company, began its work February 1, 1927.

### Survey of Wired Homes Made

The first work was the taking of a census of the county. This, of course, covered only the wired homes and the people who were believed able to buy electric refrigerators.

At each home visited, the salesman asked about the amount of ice used, the average cost of ice for a month or a year, the number in the family, and other data that would be useful later. This information was placed on cards and filed away for future reference. Little effort to sell was made in connection with this census work, although the salesmen were ready to give full information to any who might be interested, and the questions asked indicated that a surprising number of the people of the county had been reading about electric refrigeration in the various magazines and newspapers coming to their homes.

### "Key Citizens" Sold First

With the coming of the first warm spring weather, prospects were selected from the names turned in during the census and the drive for sales was on in earnest. At first effort was concentrated on the "key citizens"—people of influence in the community, whose use and endorsement of electric refrigerators would be an aid in selling the rest of the people. The wisdom of this course was very apparent in a short time, and every person who bought helped sell friends and neighbors.

The Stevens organization is highly enthusiastic over the first year's experience with electric refrigerators—any small city store would be enthusiastic over a new line that added \$100,000 to its volume and proportional profits the first year—and has begun its second year's work on a larger scale. The pioneer work has been done, and the outlook for the year's sales is indeed bright.

### Benjamin Makes Appointments

Benjamin Electric Mfg. Co., Chicago, Ill., announces the appointment of G. B. Weber as manager of refrigerator sales. Mr. Weber, formerly very active in the electrical division of the company, has for several years, as assistant to the vice-president, been in charge of sales of the commercial stamping and enameling division. R. W. Staud, advertising manager of the company, will direct advertising and sales promotion of the refrigerator division.

## One Way to Cut Costs

Keep your investment for equipment low: that's one sure way to cut costs. By having G. P. & F. shoulder your stamping problems you can accomplish this big saving.

Without investment you can have the advantage of a 15-acre plant—completely equipped, and manned by a skilled organization of 1,500 workmen.

In addition to producing finished stampings at a saving, G. P. & F. engineers offer you help in design backed by 48 years' experience in improving the products of leading manufacturers in varied fields.

In this age of ever stiffening competition are not such advantages worth careful consideration? Start an investigation by just writing for the booklet "Stampings."

**GEUDER, PAESCHKE & FREY CO.**

Sales Representatives in principal cities in all parts of the country

1366 St. Paul Avenue, Milwaukee, Wis.  
345 W. Ohio Street, Chicago, Ill.

**G.P.&F. STAMPINGS**  
"KNOWING HOW SINCE '81"



WORLD'S LARGEST MANUFACTURER  
OF REFRIGERATORS FOR ALL PURPOSES



## Now the New Improved McCray Cooler

FOR MEAT MERCHANTS everywhere, an end to spoilage losses... Lower operating expenses... Bigger profits! There, briefly, is the service of this new improved cooler, No. 185, now offered by McCray.

Thirty-eight years of close contact with meat merchant's needs, and our whole life-time of experience in building highest quality refrigerators, have gone into this new cooler.

Beneath its handsome oak and opal-glass exterior is the staunchness which marks every detail of McCray construction. The famous McCray system insures circulating cold air in every compartment. Extra heavy walls. Pure corkboard insulation, hydrolene sealed. Corners and top lock-jointed and bolted. Sturdy bronze hardware, heavily nickelled, with improved fasteners. These are some details of the McCray quality which insures life-time service—keeping food better, longer, at less expense.

For Electric or Mechanical Refrigeration, or ice. No remodelling or changing required to install any type machine. With either ice or machine McCray construction insures efficient, economical operation. More than 250,000 satisfied users attest McCray quality.

Send the Coupon Now for further information about the new improved cooler, the new Display-all refrigerator case, and other models to meet your specific needs. Remember there is a McCray for every refrigerator purpose—in stores, markets, hotels, restaurants, hospitals, institutions, florist shops and homes.

Remember the fine appearance of this cooler is matched by efficiency and economy, proved in service for more than a third of a century. Ask any McCray user.



**McCRAY**  
REFRIGERATORS  
FOR ALL PURPOSES  
For  
Grocery Stores  
Meat Markets  
Hotels - Restaurants  
Hospitals - Institutions  
Florist Shops  
Homes . . . .

Dealers in Electric refrigeration are invited to write for further information regarding the complete McCray line of refrigerators, all available for use with electric refrigeration SALESROOMS IN ALL PRINCIPAL CITIES (See Telephone Directory)

## McCRAY REFRIGERATORS

McCray Refrigerator Sales Corporation, Dept. 66, Kendallville, Ind.  
Gentlemen: Please send free book [ ] "How to Make More Money in Food Retailing."  
Also, without obligation, send information about refrigerators [ ] the New Improved  
No. 185 Cooler, [ ] other refrigerators for grocers, [ ] for meat markets, [ ] for res-  
taurants and hotels, [ ] hospitals, institutions, [ ] florist shops, [ ] homes.

Name \_\_\_\_\_  
City \_\_\_\_\_  
State \_\_\_\_\_



# Easy steps to profitable business

## The PLYMETL Refrigerator is Unique

The radical improvements in design effected in this refrigerator are made possible by the use of a comparatively new material, PLYMETL. This consists of a plywood panel or core to which is cemented a zinc coated steel sheet on each face. The resulting panel is light in weight, yet very stiff and strong. As used in refrigerator construction, it has the weight of a steel plate about 1/15 of an inch thick but is four times as stiff as 3/16 inch boiler-plate.

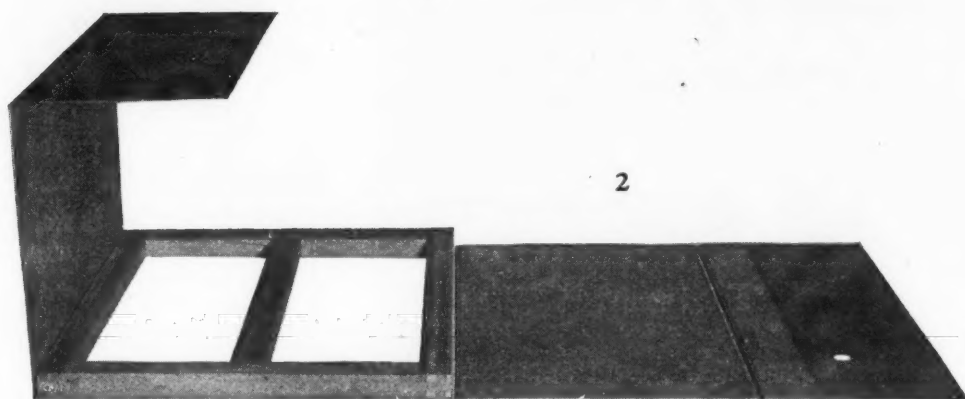
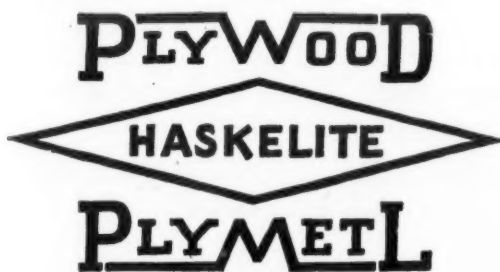
The vertical corners of the box are made by folding the PLYMETL panel along V-grooves cut at the factory. These grooves do not break the outer steel face so that in the finished cabinet there is a continuous steel surface extending around the box. The top and bottom panels are set in notches in the side panels and firmly soldered. This construction eliminates all open joints in the shell of the refrigerator, thus preventing moist air from getting into the insulating chamber and condensing. This condensation, so prevalent in ordinary boxes, is one of the primary causes of their early failure.

The strength of PLYMETL and the elimination of vertical joints makes the box a self-supporting shell with no need for a wooden frame. The only frame used in a PLYMETL cabinet is around the door where it serves as a facing for the cork.

Cork is far superior to wood as an insulation. The fact that the PLYMETL cabinet has a continuous layer of cork unbroken by wooden corner posts as in ordinary boxes means a great increase in thermal efficiency.

The PLYMETL door is also special in construction. The door panel is completely encased in steel, the faces overlapping each other at the edges of the panel where they are firmly soldered together. This construction eliminates all warping of doors.

The Vitrolite lining—better than marble—is the highest class material used for refrigerator linings. It is not affected or even discolored by any material which is likely to be placed in the refrigerator.



## Small Assembly Plant Makes Good Profit

The PLYMETL refrigerator cabinet is being made in local assembly plants. The panels are cut to size, grooved, rabbitted, and fitted with door frames at the factory. They are shipped flat to the local assembly plant, thereby saving from \$6 to \$26 on each refrigerator.

This saving in shipping cost offers a wonderful opportunity for local business men to conduct a profitable business in the assembly of these refrigerators. The investment necessary in such a plant is small—from \$5,000 to \$10,000 depending on its capacity. The PLYMETL cabinet is applicable to any type of electric unit. Wherever the local market for electric refrigerators is 3 or more per day there is an opportunity to make money on a PLYMETL assembly plant.

This is the only refrigerator cabinet adaptable to the local assembly idea. A fortune has been spent in perfecting the design and in determining the best system of assembly of the finished product.

No charge is made to the assembly company for the franchise or the use of the company's patents. The assembly plants will be given the benefits of national co-operative advertising and selling.

Details of the franchise arrangement and the selling plans will be gladly furnished.

Geo. R. Meyercord, President

# Haskelite Manufacturing Corp.

133 West Washington Street

Chicago, Illinois

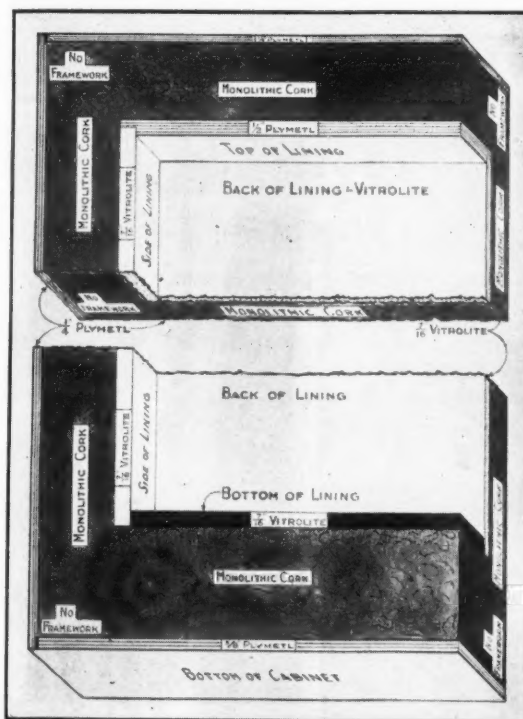
ERN 3-28 Gray

1 The flat PLYMETL panel as received by the local assembly plant from the HASKELITE factory.

2 The first step. Bending the PLYMETL panel to form the shell of the refrigerator.

3 Later steps are shown in this cross section. The PLYMETL shell encases the monolithic cork and vitrolite box.

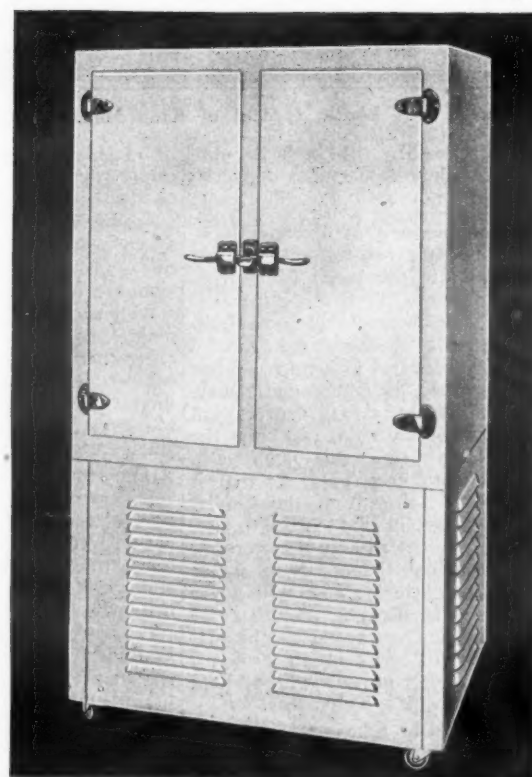
4 The completed PLYMETL refrigerator. Perfectly sealed. Not a joint anywhere to permit leakage and incipient deterioration.



## Opportunities in these cities

If you live in one of these cities do not fail to get the PLYMETL assembly plant plan.

AKRON	NEW ORLEANS
ALBANY	NORFOLK
ATLANTA	OAKLAND
BIRMINGHAM	OKLAHOMA
BRIDGEPORT	CITY
BUFFALO	OMAHA
CANTON	PITTSBURGH
COLUMBUS	PORTLAND
DALLAS	PROVIDENCE
DAYTON	READING
DENVER	RICHMOND
DES MOINES	SALT LAKE CITY
DULUTH	SAN DIEGO
EL PASO	SAN FRANCISCO
JACKSONVILLE	SCRANTON
HARTFORD	SEATTLE
INDIANAPOLIS	SPOKANE
KANSAS CITY	SYRACUSE
LOS ANGELES	TACOMA
LOUISVILLE	TOLEDO
LOWELL	TULSA
LYNN	UTICA
MEMPHIS	WASHINGTON
MILWAUKEE	WILMINGTON
MINNEAPOLIS	WORCESTER
NASHVILLE	YOUNGSTOWN





## How a Knoxville Furniture Store Pushed Sales from 12 in 1923 to Over 500 to Date in 1928

Crack Salesman Tells How He Sold Kelvinators from a Catalogue in 1923 and How He Sells from a Complete Display Today

By Archie Richardson

NOT a high-priced substitute for the ice refrigerator in use, but a piece of home equipment as far ahead of it in performance as the modern electric light is ahead of the old oil lamp.

That is the offer of the salesman of the King Mantle and Furniture Company, of Knoxville, Tennessee, when he calls on a prospect. He has for sale something that will do everything the ice refrigerator will do, and far more, and that will serve its owner more economically. And in following out this idea, he and his co-workers have placed more than five

hundred electric refrigerators in the homes of Knoxville and the surrounding territory placing this section in the lead of the whole United States in the percentage of homes using Kelvinators.

protection to the health of the family, especially the children. The beauty of the box is a thing that speaks for itself, and at once appeals to the heart of the housewife. The big thing in the way of a sale, of course, is the first cost, but shown the advantages and the fact that the purchase of an electric is an investment that will yield good returns through money saved, and in no sense an added expense, and the proportion of people who can be induced to make the investment required will surprise those who think the selling of electric refrigerators is a difficult task."

On visiting the home of a prospect, Mr. Wells and the other salesmen give an invitation to visit the display room at the store if interest is indicated. Nearly all sales are made during or after such a visit.

Complete Display Makes Sales Easier

The display, which occupies a room on an upper floor, includes each size and type

the work done, but by keeping a record of prospects found and closing them when warm weather comes, winter work has been made just as profitable as summer work.



The entire organization of the King Mantle and Furniture Co., Knoxville, attended a banquet given in the display room of the store

hundred electric refrigerators in the homes of Knoxville and the surrounding territory placing this section in the lead of the whole United States in the percentage of homes using Kelvinators.

"The biggest handicap in selling electric refrigeration is the fact that so few people really know what refrigeration is. The ideas of the general public are limited by the inefficient performance of the common ice box. Once a person is shown the difference between wet and dry refrigeration, and the fact that the latter is the cheaper, the way to a sale is made easy. And once he has used an electric unit, he will no more think of giving it up than he would think of selling his automobile and buying a horse and buggy."

The speaker was D. Howell Wells, who discovered a local demand for electric refrigeration back in 1923, and induced his company to take on and pioneer the line,



A booth, typical of King Mantle displays

and who has personally sold a large portion of the five hundred machines delivered by the Knoxville house.

### Takes Temperature of Prospect's Refrigerator

"When I go into the home of a prospect," said Mr. Wells, "I first get permission to take the temperature of the refrigerator, which will probably run around sixty degrees on a warm afternoon. Then I remind the owner, in a diplomatic way, that incubation sets in at fifty degrees and that a refrigerator that doesn't keep the temperature down below this point is a mighty poor one to keep food in; that it is a menace to the health of the family, and that it is wasteful and costly to use, since food placed in it rapidly deteriorates."

"Then I point out that a thermometer kept in an electric refrigerator will never go as high as fifty degrees, and that the efficiency of the unit is proved by the fact that food that will spoil in an ordinary refrigerator in a day or two will be kept perfectly for weeks in a Kelvinator."

"When it comes to figuring costs, it is not difficult to show that the cost of an electric unit—interest on the investment, depreciation, upkeep and current consumption considered—will be less than the ice bills and the cost of the food that spoils when the ice man is missed or when the food is left too long in the ice box."

### Stresses the Investment Angle

"Of course, I use the many other selling points; one of the chief of which is the

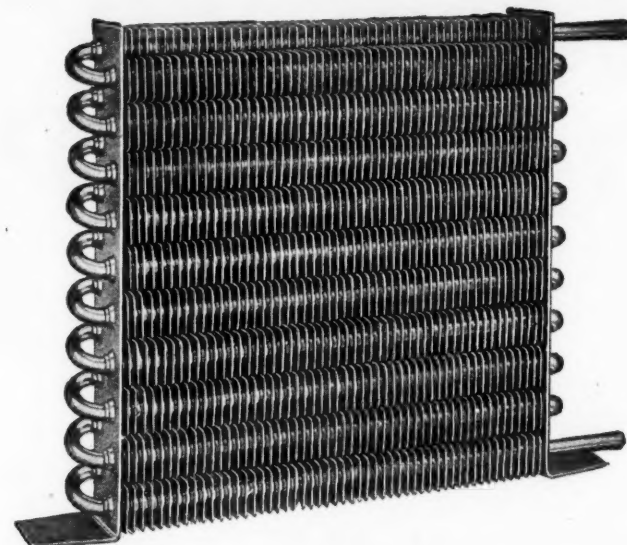
of machine sold. This affords an opportunity to select the machine best suited to the home—and quite a consideration—to see it in use before it is bought. The visitor can take the thermometer reading of any of the machines on display and compare it with the reading found in the refrigerator at home. The salesman often points out bottles of milk, meat, fruit, and other perishables that have been in the cabinet for weeks. This never fails to interest the housewife, who knows from sad experience the limitations of her own refrigerator in preserving foods.

The store's experience in selling electric refrigerators dates back to 1923, when twelve were sold. The first three or four orders were taken without a machine in the house to show; only a set of photographs and specifications in the hands of a salesman who had a hunch there was a demand for electric refrigeration in his territory. Within a week there were found three people who had already been sold through the manufacturer's advertising and who were ready to give their orders almost as soon as the salesman had presented his proposition.

### Selling Organization Kept Intact the Year 'Round

Shown that the market existed, the company employed a man who had been trained by the factory to install and service its machines, and selling began in earnest.

With twelve machines sold the first year, and with satisfactory service given each

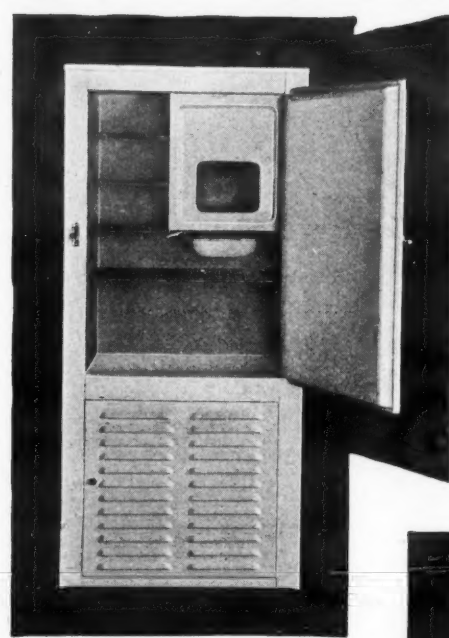


## BUSH CONDENSERS

SEAMLESS COPPER TUBES  
INDIVIDUAL FINS  
MAXIMUM EFFICIENCY

The Bush Manufacturing Co.  
Hartford, Conn.

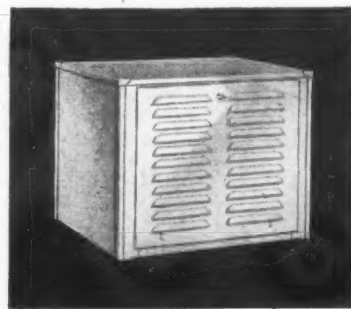
White - Hanna  
302 Lincoln Bldg., Detroit, Mich.



Models No. 100 and 103

	100	103
Food Capacity	4.4 cu. ft.	5.1 cu. ft.
Exterior Depth	19 1/4 in.	22 in.
Exterior Width	26 1/4 in.	26 1/4 in.
Exterior Height	57 1/2 in.	57 1/2 in.
Exterior Finish	Lacquer	Lacquer
Interior Finish	Enamel	Enamel

All Apartment Home Models are also available with porcelain interior finish.



### Detached Compressor Compartment

For remote installations of Models No. 102 and 105.

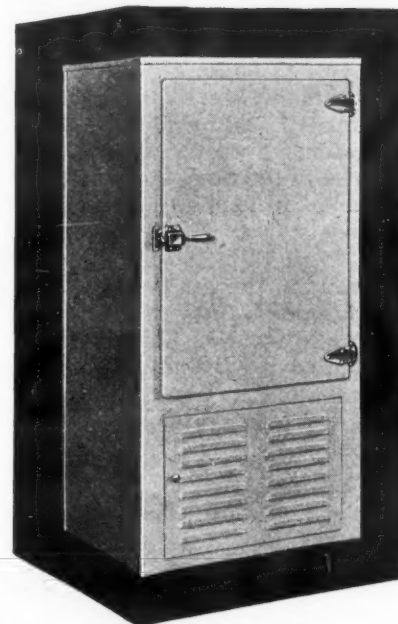
	Height	Width	Depth
No. 1	22 3/4 in.	26 1/4 in.	19 1/4 in.
No. 2	22 3/4 in.	26 1/4 in.	22 in.



Complete descriptive literature mailed on request

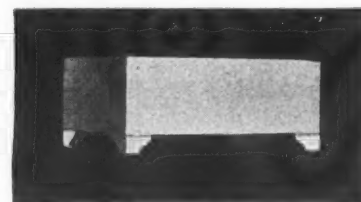


## Apartment Home Models



Models No. 101 and 104

	101	104
Food Capacity	4.4 cu. ft.	5.1 cu. ft.
Exterior Depth	19 1/4 in.	22 in.
Exterior Width	26 1/4 in.	26 1/4 in.
Exterior Height	52 in.	52 in.
Exterior Finish	Lacquer	Lacquer
Interior Finish	Enamel	Enamel



### Adjustable Base For Models No. 102 and 105

For remote installations, adjustable base can be furnished in almost any desired height.

	102	105
Food Capacity	4.4 cu. ft.	5.1 cu. ft.
Exterior Depth	19 1/4 in.	22 in.
Exterior Width	26 1/4 in.	26 1/4 in.
Exterior Height	36 1/4 in.	36 1/4 in.
Exterior Finish	Lacquer	Lacquer
Interior Finish	Enamel	Enamel

REX Cabinets, residence and apartment home models, offer new conceptions of cabinet beauty, convenience and economy. Their beauty is clearly illustrated in the variety of colors and the gleaming white interior finishes of either porcelain or enamel. Their convenience is notable in the arrangement of the food compartments and the spacing of shelves and doors.

All Standard Refrigerating Units can be quickly and easily installed in any REX Cabinet



REX MANUFACTURING CO. CONNERSVILLE, IND., U. S. A.

## LASSEN — TEMPERATURE — CONTROLS

POSITIVE RANGE AND DIFFERENTIAL ADJUSTMENT  
NON-DETERIORATING MERCURY TUBE SWITCH—MEET ALL REQUIREMENTS  
GOODNOW & BLAKE MFG. CO. 3840 BEAVER STREET  
DETROIT, MICH.



# Ice-Box Sales Will Pay Extra Profits and Pave the Way for Future Business

If the Prospect Can't, or Won't, Buy a Complete  
Outfit, Get the Order for the Cabinet

By W. G. Seeger, Vice-President, Seeger Refrigerator Co., St. Paul, Minn.

THE home with an old and unsatisfactory ice-box is, perhaps, the best prospect for the electric refrigeration salesman. There is naturally an added resistance to the sale of a complete unit, or a remote installation, when the prospect has only recently purchased a new refrigerator cabinet. If the box is poorly constructed or insulated, the conscientious salesman does not like to install his unit in it because of the possibility of poor service. On the other hand, if the cabinet was fairly expensive, the customer objects to discarding it. If the box was not originally arranged for the installation of the chilling tank the extra cost of installation either adds to the sales resistance or reduces the profits of the dealer.

Every new industry has to meet new problems as time goes on, and the electric refrigeration industry is no exception. The problem that the electric refrigeration industry has before it is that of not making enough profit. I am now thinking of the dealer and the distributor—and one way of solving that problem is for the dealer and the distributor to not only sell cabinets for use with refrigerating machines, as they are doing at the present time, but also sell cabinets for use with ice.

I am mindful of the tremendous waste of effort, or rather effort that is now going to waste when a salesman calls on a prospective purchaser, or talks to one in the store, and intentionally or unintentionally, the customer is made dissatisfied with the cabinet or refrigerator which is now in their home. As is most often the case, a sale is not consummated, possibly because the prospective purchaser has not sufficient funds to pay for a complete outfit of new cabinet and machine, or perhaps because the prospective is not thoroughly sold on the idea of electric refrigeration.

In either case, the seed of dissatisfaction with the refrigerator they are now using has been planted. Why not take advantage of this dissatisfaction and sell that customer a new cabinet for use with ice, that is, a cabinet that is built primarily for ice but all equipped to receive refrigeration machine when desired—a most wonderful prospect for a future machine sale. In this way the salesman makes a profit for himself and a profit for his employers.

For the employer it will mean, in a great many cases, profit as against loss over a total year's sales, and will cut down the turn-over, and also labor turn-over in salesmen. For the salesman it will mean a greater return and a greater satisfaction with his work.

The ice and electric machine branches of the refrigeration industry are rapidly becoming conscious of the fact that they have many interests in common. The ice industry is organizing its efforts to promote the sale of better cabinets in the homes, realizing that this means greater satisfaction to the customer and a fuller appreciation of the advantages of adequate refrigeration in the homes. There is an enormous market for a better quality of cabinet, not only in new homes and apartments, but for the replacement of old ice-boxes which have been in use for many years. Until the advent of electric refrigeration, many people were unaware of the inefficiencies of their present equipment.

Advertising, and the activities of salesmen, have focused attention upon the defects of the old outfits. Many people will be willing to make the first step, that of buying a new and better cabinet, if they know that the purchase will represent a definite part of the cost of a complete electric refrigeration installation later. No doubt, the machine will come much more quickly because of the presence of a suitable cabinet.

The idea is particularly applicable to new homes put up by speculative builders. These builders naturally want to keep the selling price as low as possible, and no doubt some of them would prefer to leave the selection of the machine to the ultimate owner. Of course, the salesman will always endeavor to sell the complete installation wherever there is a possibility of doing so, but there will always be a certain percentage of prospects who are not quite ready to buy the machine. In such cases, why not sell the cabinet and get this profit at once? In doing so, you make a customer who will be inclined to give you the business when he is ready to buy the machine installation.

With this thought in mind, we have designed a new line of ice cabinets, known as Models 11-7, 13-9, 24-16, 40-31—the last two numbers are the larger sizes. These numbers indicate interior cubic footage, for instance, in Models 11-7 there is a total cubic footage of eleven feet, and a net food storage capacity of seven cubic feet.

In construction and materials used, these cabinets are the same as our present successful machine line, namely, Models 710, 912, etc., with a slight change—in place of the Chiltray, these new cabinets are equipped with a porcelain drip pan that is made a part of the interior lining, with a drain and an ice rack. The interiors and exteriors are of porcelain.

These cabinets are also equipped with the vegetable storage compartment. There are spuds in the ceiling and in the back for the basket for the suspension of the cooling unit. The sleeved opening for the tubing used with machine equipment is located in the back and as standard equipment is plugged with a cork plug and brass nickel-plated cover. In other words, the cabinets are all ready for electric refrigeration at any time, although they are primarily built for ice.

We believe that this new line of cabinets offers a real opportunity for the electric refrigeration distributor and dealer. It provides another way of affording satisfaction to the customer, at the same time taking up the slack in the sales organization, using wasted energy and turning it into profits.

## 40 ATTEND ZEROZONE SCHOOL AT SIOUX FALLS

The Tri-State Electric Company, Sioux Falls, S. D., held a Zerozone electric refrigeration training school for 40 dealers from South Dakota, northwestern Iowa and southwestern Minnesota during the week of February 13. On Thursday, February 16, a banquet was held at the Carpenter Hotel for the group, at which Allan S. Graham, vice-president and manager of the Tri-State Electric Co., was toastmaster. Talks were given by a number of dealers, as well as by the officers of the company.

The principal address of the evening was given by Glen G. Hall, representative of the Iron Mountain Co., Chicago, manufacturers of the Zerozone units.

## Who Says People Don't Window-Shop?

During "Neglected Kitchen Week" in Atlanta a nine-hour tally-check was made as to the number of people who stopped, and looked into, the two attractive windows at Davison-Paxon's. Would you believe that in these nine hours 10,723 people stopped and viewed the "Color-in-the-Kitchen" window and the "Neglected Kitchen" window? Well, those are the absolute figures . . . saying nothing of the number of people who passed the windows and "read as they ran!"

Interesting and novel window trims are powerful advertising mediums, particularly so when the windows are properly and adequately illuminated. Let's keep our own store windows neatly and fascinatingly trimmed.—Georgia Power Co., Sales Log.

"I want to take this opportunity to commend you on the fine growth your paper has shown in the past few months."—C. K. Johnston, N. K. Ovalle Co., General Electric distributor, Harrisburg, Pa.

## A Lacquer Finish That Has Stood the Test



M & W White Refrigerator Lacquer Enamel has been adopted for the following

### Reasons

- No. 1—**BEAUTY OF FINISH.** It resembles Porcelain in color and lustre.
- No. 2—**APPLICATION DIFFICULTIES** are minimized.
- No. 3—**TOUGHNESS and DURABILITY.**
- No. 4—**EASE** of cleaning after assembly.
- No. 5—Does not **CHIP** where drilling is necessary.
- No. 6—Has been built upon many years of **EXPERIENCE** and Research in the Manufacture of Lacquers and Enamels for finishing Metal and Wood.
- No. 7—Has been proven in actual large volume **PRODUCTION** and has withstood the most severe and critical tests.

Spray two coats over M & W Lacquer Primer or M & W Oil Base Primer to produce a **LASTING, BEAUTIFUL FINISH.**

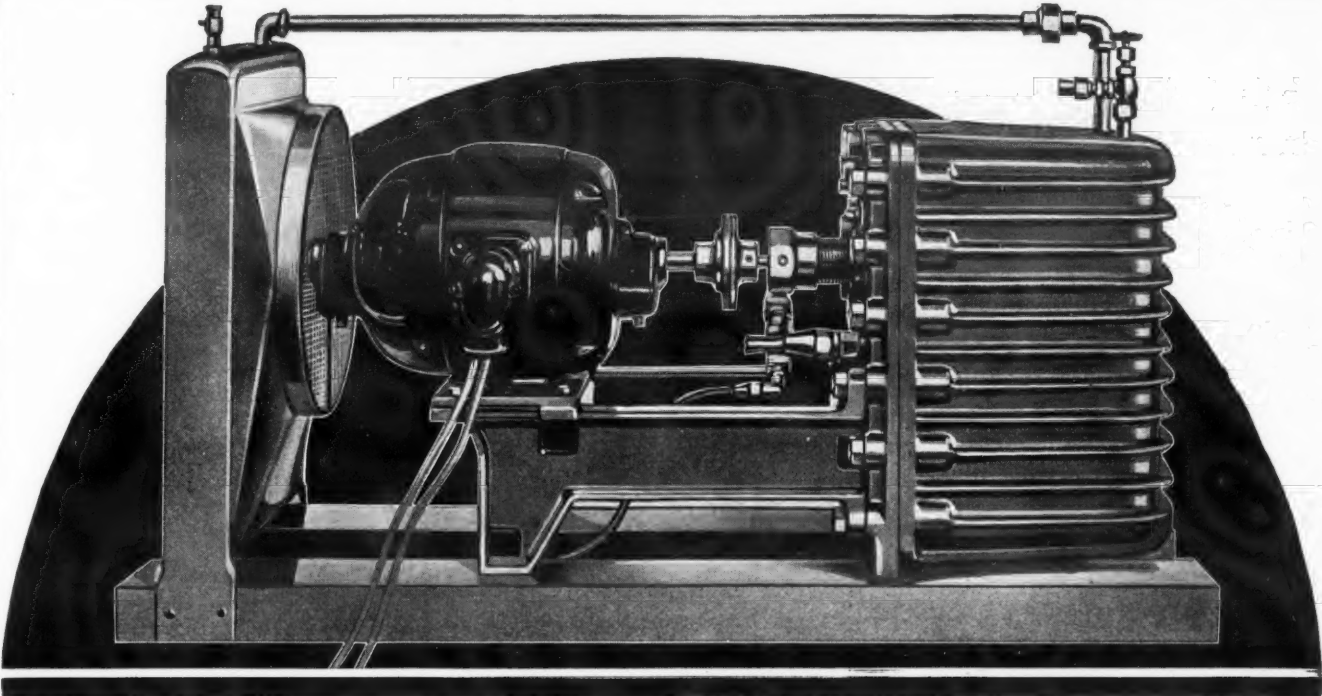
Available in any required color.

**MAAS & WALDSTEIN CO.**  
METAL & WOOD  
LACQUERS and ENAMELS

45 JOHN ST., NEW YORK  
WORKS—NEWARK, N. J.

CHICAGO OFFICE  
AND WAREHOUSE  
1115 Washington Blvd. West

LOS ANGELES OFFICE  
AND WAREHOUSE  
1212 Venice Blvd., Los Angeles, Cal.



## THE MOST DEPENDABLE ELECTRIC REFRIGERATION UNIT EVER BUILT!

### Some of the Reasons for Haven Dependability

- No Needle Valves
- No Compressor Valves
- No Belts
- No Connecting Rods
- No Crankshaft
- No Piston Rings
- No Cylinder Side Thrust
- No Compression Loss even after years of steady service
- No Delicate Mechanisms
- No Corrosion
- Utmost-Simplicity—Only Seven Moving Parts
- Positive, Permanent Lubrication.



IN the Haven Refrigeration Unit we offer, without fear of contradiction, the simplest, sturdiest, most dependable mechanical compressor unit ever built for refrigerating purposes.

This is a strong statement. But all we ask is an opportunity to let you prove it to your own satisfaction. Write for copy of "Bulletin A" which illustrates and explains in detail the engineering principle and mechanical design and operation of this unique unit. The successful result of ten years' experimental work and four years' actual service.

There is no other electric refrigeration unit like the "Haven." No other can be like it because Haven design is fully covered by basic patents.

Write today for "Bulletin A" — give yourself an opportunity to judge whether or not this really revolutionary Unit is all we say it is.

HAVEN MANUFACTURING COMPANY, Milwaukee, Wis.



**Simplest  
Domestic  
Refrigeration  
Controls**

Listed as Standard by  
Underwriters' Laboratories, Inc. No. 121 Surfaceswitch



**INVESTIGATE** the Con-Tac-Tor No. 121 Surface-switch. Examine its simplicity—nothing to get out of order. See how easily it can be applied to any unit. Try it out—note the constant temperature it maintains. Contact trouble is eliminated through the use of the Con-Tac-Tor (mercury switch). Such features mean satisfied users.

Write for Bulletin No. 120 on Refrigeration Controls.

**ABSOLUTE CON-TAC-TOR CORPORATION**  
ELKHART, INDIANA

**HAVEN** **ELECTRIC REFRIGERATION UNITS**  
for Domestic and Commercial Service  
BACKED BY A QUARTER CENTURY OF SUCCESSFUL REFRIGERATION EXPERIENCE



## REX COLE IS HOST AT BREAKFAST FOR 300 N. Y. SALESMEN

G. E. Officials Address Metropolitan Sales Force Meeting at Commodore

At a breakfast held in the ballroom of the Hotel Commodore, at eight o'clock on the morning of February 28, Rex Cole, metropolitan distributor for the General Electric refrigerator, presided at a gathering of three hundred members of the metropolitan district sales force and General Electric executives from Schenectady and Cleveland.

"The modern method of getting a sales organization together at breakfast time, rather than at luncheon or dinner, seems to be finding favor with all large corporations as well as at the White House," said Mr. Cole to his guests. He went on to explain that General Electric refrigerator sales have reached a new high peak in the New York area, and stated that over four and one-half million General Electric refrigerator advertisements will appear in New York newspapers during the next few months, in addition to the national advertising of the General Electric Co., and an intensive sales drive on the part of the Cole organization.

O. D. Street, vice-president of Lord & Thomas and Logan, advertising agency, addressed the breakfasters on the subject of advertising and sales co-ordination. "On the extent to which each co-operates with the other depends the success of any campaign," said Mr. Street. "During the next few months General Electric refrigerators will be advertised in twenty-four national magazines and in commanding space in the leading trade papers and newspapers of the country. This campaign, which started only eight months ago, has already met with phenomenal success and has conclusively demonstrated the value of metropolitan newspaper advertising on a large scale."

### Electric Refrigeration Growth

That electric refrigeration is sweeping the nation and revolutionizing domestic science was the statement of P. B. Zimmerman, sales manager of the electric refrigeration department of the General Electric Co. at Cleveland. "Twenty-seven years ago," said Mr. Zimmerman, "a French monk, the Abbe Audiffren, conceived, developed and built an electric refrigerator wherein all the mechanism was hermetically sealed and the moving parts self-lubricated. A number of these original machines are still running in France, after twenty-seven years of use. They have never been re-oiled or overhauled in any way."

"Before the War General Electric acquired the American rights to manufac-

## Midnight? No, Eight-Thirty in the Morning



300 members of the Metropolitan New York G. E. sales force

ture here the Audiffren machines, and many of the American-made machines have now been in service seven or eight years without requiring any attention whatsoever. These models, however, were found too expensive for the average home. Therefore, using the approved principles of the Audiffren machine, the General Electric research laboratories have been for years working to perfect a moderate-priced domestic refrigerator suitable for use in the average household. This new General Electric machine was first placed on the market last June. Already more than 50,000 have been sold.

"The perfection of the electric refrigerator is one of the really new and important developments of the last decade. It constitutes what is possibly the greatest contribution that electrical science has given to the public."

"Modern electric refrigerators are found in Europe, Africa and South America. They are literally sweeping the world."

"Herbert Hoover has said that electric refrigeration is accomplishing a saving of \$700,000,000 a year in America today, and that the American waste of food would feed the entire French nation."

"Not only will electric refrigeration effect tremendous savings in food waste, but it will accomplish marvels in the betterment of public health as the people become—as they are rapidly becoming—'refrigeration conscious.' At first there was an inclination on the part of the ice interests to fight electric refrigeration, but the ice industry owes its 1927 prosperity to the increased use of ice which electric refrigerating advertising has caused. This increase amounts to 30 per cent, whereas formerly only 40 per cent of the population

used ice in summer and but 14 per cent all the year round.

### Will Cool Summer Homes

"I believe that the day is coming when electric refrigeration will be used to cool our homes in summer, just as we now heat them in the winter. Electric refrigeration, in fact, is causing a complete revolution in the realm of domestic science. It is contributing to the better health of the whole family—preventing waste by preserving foods, and making them more palatable by bringing out their flavor."

Other speakers were T. K. Quinn, manager of the electric refrigeration depart-

ment of the General Electric Company; A. R. Stevenson, of the Schenectady laboratories; A. L. Hart, of New York, and E. R. Cooper, of Chicago. Conferences continued throughout the day.

### Central Power Co., Grand Island, Neb., Sold 45 Units in 1927

Central Power Co., Grand Island, Neb., reports the sale of 45 electric refrigerators during 1927. Five electric units and one gas unit have been sold so far in 1928. W. J. Read, business manager, reports that the outlook seems very bright the coming year.



Write for our new 1928 proposition assuring you  
**MORE AND BIGGER SALES**  
with Thesco Display Fixtures  
**The C. SCHMIDT COMPANY**  
John and Livingston Streets  
Cincinnati, Ohio

## All-Porcelain Refrigerators

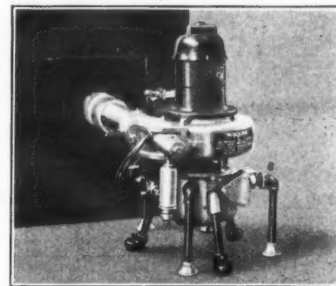


Now sold direct to the Electric Refrigeration Trade and backed by our 90 YEARS' experience in the Kitchen Equipment field.

**SAVORY, INC.**  
New York BUFFALO Chicago



The Wayne Oil Burner provides absolutely automatic home heat. No belts, cams or floats; only three moving parts, all on one shaft. Nationally known and backed by every resource of Wayne, 37 years engaged in precision machinery manufacture.



**WAYNE** Electric Refrigeration . . . available in a size for every family and a color for every kitchen. The last word in outward appearance and, as a guarantee of mechanical perfection, "made by Wayne."

## An all-year Franchise for an all-year line!

**T**O keep out of the red during the time when refrigerator sales slump, what better companion line than an oil burner? Many dealers now handle both . . . and find an all-year profit. Others, in other sections, handle but one of the Wayne products and, with Wayne cooperation, enjoy ready sales.

### Dealer support that counts!

Advertising that blankets your territory, direct mail and other dealer-helps . . . a modern plan that makes sales easier (cash or payments); a new idea in home equipment merchandising that means profits.

### Service—with less servicing

Wayne products deliver the service for which they were designed. And they do so with the minimum of servicing, that profit-eating bugbear of the household equipment dealer.

### Handle one or both products

Desirable territories require dealer representation of Wayne Oil Burners and Wayne Electric Refrigeration. The approved dealer may handle either one or both.

### • TO DEALERS •

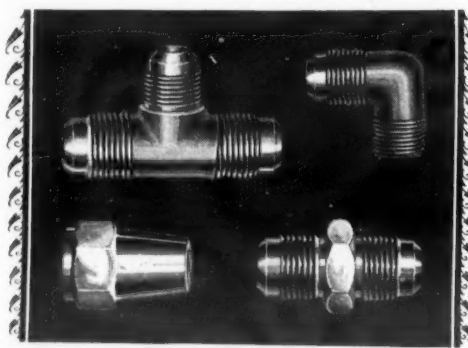
If you are financially responsible and have prestige in your community, here is an opportunity to greatly increase your volume and profits. Exclusive territory, direct factory connection and complete merchandising assistance. Get details now!

**Wayne**

Write

**WAYNE COMPANY**  
Fort Wayne, Indiana

Wire



## PIPE and TUBE FITTINGS

### Made From Brass Forgings

For many years we have specialized in the manufacture of brass fittings, in small sizes, for connecting brass and copper tubing.

We are now producing similar parts made from BRASS FORGINGS—including a full line of forged nuts. These fittings are especially designed to meet the requirements of Iceless Refrigerator Manufacturers for fittings of a superior type. These fittings will not leak gas, air or liquids under mechanical pressure. They have the compact grain structure, high tensile strength and smooth, flawless surfaces found only in forgings. Our forged fittings are accurately machined, carefully inspected and individually wrapped and labeled.

Send a sample or blue-print for quotations on parts of a special nature. Catalogue No. R-30, showing our complete line of standard fittings, will be mailed on request.

**COMMONWEALTH BRASS CORPORATION**  
DETROIT 5781-5835 COMMONWEALTH AVE. MICH.



## Is Big Production Really As Big an Advantage As Most People Think?

Small Factory May Often Produce Better Goods at a  
Lower Price Due to Small Overhead

By G. R. Meyercord, President, Haskelite Mfg. Corp., Chicago

THERE is an old adage which hardly anyone believes nowadays. It says that the world will make a beaten track to the door of the man who can make the best mouse trap, even though his factory be located in the middle of the woods, and as we might say, even though he struggles along in business without the benefit of sales managers, branch offices, and Saturday Evening Post advertisements. That may have been true in the old days, but we live today in an age of quantity production and high pressure salesmanship.

If you ask any ten people in the street which factory can make the best mouse traps for the least money—a factory which covers a city block and numbers its employees by the thousands, or a little one-horse factory with only a score of employees that is located in the manufacturing backwoods—nine out of ten will unquestionably reply that the small factory does not have a chance these days. The popular belief is that as quantities go up, prices go down. Few people ever question the supposed ability of the big manufacturer to produce merchandise far cheaper than it can ever be made by the small factory.

It is my intention in this article to question this belief, and to show that often the small factory is actually in a position not only to manufacture better goods, but to manufacture them at a lower price than can be done in the big factory. It is my firm conviction that in many ways a small business has a better chance today than it ever had before. There are certain limitations and disadvantages to volume production which in actual practice really give the small plant a big advantage. When the small plant is large enough to use the most economical automatic machinery, it is in a position to manufacture goods at the lowest possible cost. After the business passes this point of volume, and begins simply to add on manufacturing unit after manufacturing unit, added overhead and the inherent disadvantages of big production increase so rapidly that the manufacturing cost in the big plant is bound to be higher than in the well run small plant.

### John Jones Decides to Make Mouse Traps

Perhaps this can be most clearly illustrated by specific example. Because it is as good as any, let us take the mouse trap factory for our illustration. When John Jones decided to quit farming and go into making mouse traps for his neighbors, he probably cut out the wooden bases with a hand saw and wound the springs on an old nail. As business increased, he put in a power saw and built a jig on which he could wind his springs. Eventually he took on an apprentice and as business got still better, a couple of helpers. Gradually he kept putting in more and better power machinery, kept cutting down on hand labor and reducing his costs by the application of better manufacturing methods. Every move lowered his cost and made a better trap.

At last, after hard work in the plant and honest selling on the outside, his production was built up to a volume of 500 traps per day. This was the point to which he had been working for several years, because with a volume of 500 traps per day he was able to install an automatic spring winding machine. This machine not only gave him a better spring but reduced the cost of this part of his trap to almost a fourth of what it had been with the old-fashioned hand made spring. The big automatic machine reduced the cost of his trap right down to bed rock—let's say a price of 3.72 cents. At 3.72 cents per trap John was able to make a nice profit. He was his own superintendent and his own sales manager. One girl in a partitioned-off office answered the telephone, wrote the letters, and kept the books. The original apprentice took care of the woodworking department and the original helper ran the big spring winder.

Soon John began to consider making his business bigger and better, in line with the popular theory that bigger volume meant lower costs. First off he found that to maintain the same low

cost production must be increased in jumps of 500 traps per day because that was the capacity of the automatic spring winder, and with two spring winders he must sell a thousand traps per day. But John worked hard and not only sold 1,000 traps per day but by introducing them into the ten cent stores, jumped his production up to 2,000 traps per day, remodeling the plant and enlarging it to make room for four big automatic spring winding machines which were necessary.

### More Mousetraps, More Overhead

Strange to say, at the end of the year when he figured up his unit costs, he discovered that they had jumped from 3.72 cents per trap to 3.98 cents per trap. The reason for the increased cost is not hard to see. First a foreman had been necessary to supervise the four automatic spring winding machines. Another foreman had been required to keep things moving in the woodworking department. General plant problems had also become important. A high salaried superintendent was necessary. John now found it impossible to spend any time in the plant itself. The one girl who used to answer the letters had now become office manager, supervising four stenographers and a bookkeeper. There were three salesmen out on the road sending in expense accounts which John looked over at his big mahogany desk.

To make a long story short, overhead was decidedly on the up grade. The salaries of the foremen, superintendent, and the additional help all came right out of the profits. The capacity of the big automatic spring winding machines still remained at 500 traps per day. But instead of the labor bill on each machine amounting simply to the wage of the operator, each machine now had to bear its proportionate share of the salaries of the foremen, superintendent and inspectors, which had been made necessary simply because the plant was bigger.

This example might be carried on to the point where John's mouse trap business was so big that he began to buy his own iron mines, timber tracts, and other sources of raw material. But it would only go to show that overhead increases more rapidly than production whenever a unit basic process undergoes a process of multiplication. The facts are that these overhead expenses increase like an inverted pyramid. Duplication and reduplication of machines or unit processes calls for an ever increasing number of foremen, superintendents, inspectors—inspectors to inspect inspectors—inspectors to inspect the inspectors of inspectors, etc., etc., etc.

But there are other disadvantages to multiplication of basic processes. Labor problems arise, and efficiency experts become necessary. John Jones' original helper who ran his first automatic spring winding machine took a personal interest in the machine and in the factory. He was his own inspector, foreman, and efficiency expert. Under his personal interest the machine needed a minimum of repairs and he delivered a volume of work never touched by the foreman-driven operators who people John's plant after it gets big. In fact, waste begins to creep in at every corner as production rises. Income taxes mount, and tax assessors in general take a greater interest in the big factory. The whole organization becomes clumsy and unwieldy. If a sudden plague were to wipe out all the mice and leave John faced with converting his factory to the manufacture of another product, there is no question but that the conversion of a small factory could be much more

easily accomplished than the changing over of a big organization with a complicated organization. Taking up the slack of the varying demand is always easier in the small organization than in the big one.

### Highest Efficiency in a Single Manufacturing Unit

The example of the mouse trap can be applied to hundreds of actual American industries. In the lithographing business the unit of manufacture is the press, and a one-press plant can be operated with a far lower percentage of overhead than the ten-press plant. So too with enameling, where the furnace is the unit of manufacture; with glass making, where the tank is the unit, with the bakery and its oven; the soft drink business and the bottling machine; the foundry and the cupola; and so on through a long list of industries, all of which are built about a single machine, or a single group of machines which form a basic unit. Properly managed, the small business just large enough to use a single basic unit will always be able to operate at a lower cost per unit than the big plant, which is merely a multiplication of a number of these units.

There is no questioning the value of big volume when it enables the use of big machines which save labor and reduce costs. No one questions the value of many of our American methods which enable us, by the use of automatic machinery, to pay our workmen as much for an hour's labor as any European plant would pay for a day's work, and still manufacture goods which can be sold in competition with hand made European products. But that is no reason why we should lose sight of the fact that bigness has its distinct disadvantages and that they should be avoided wherever possible.

How to avoid the evils of quantity production and how to take advantage of the benefits of the small plant is one of our most vital industrial problems to—  
(Concluded on Page 14, Column 2)

# Juruick

## REFRIGERATION

—for every commercial requirement

The Juruick is a profitable proposition for dealers who can handle a complete line of refrigeration for every commercial requirement.

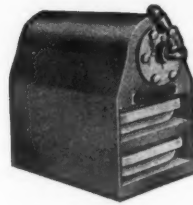
Set the thermostatic control—"turn the switch"—and the Juruick automatically provides just the degree of cold required, day after day at minimum cost. Such is Juruick service.

Desirable territories are still open for responsible dealers

AMERICAN ENGINEERING COMPANY

2403-13 Aramingo Ave., Philadelphia, Pa.

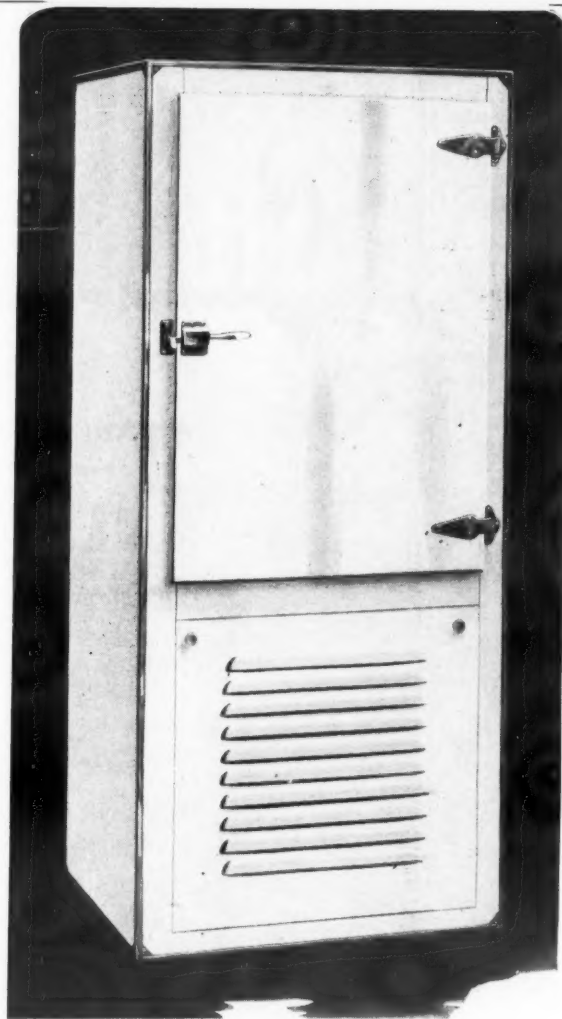
### Cutting costs on apartment installations



The new Electro-Kold frost unit No. 55 does this! Yet it embodies a new exclusive feature—a positive oil return. Can be used successfully in old as well as new apartment buildings! Rigid construction, polished Monel metal baffle front. Direct expansion float valve type. For multiple control, or unit operation with the new Timken bearing equipped Electro-Kold Compressor. Write or wire for details. The Electro-Kold Corporation, Spokane, Wash., U. S. A.

## ELECTRO-KOLD

Since 1922—the simplest electric refrigerator.



Model 515 Alaska  
Designed for electric refrigeration

### A Few Alaska High-Lights

- 1 Fifty years of leadership in making refrigerators.
- 2 A fixed policy of national advertising.
- 3 Genuine cork board insulation.
- 4 Roller type vegetable bins.
- 5 High grade porcelain made in own porcelain plant.
- 6 Swinging louvre base doors.
- 7 Heavy substantial hardware of solid brass.
- 8 Variety of sizes.
- 9 Any unit with porcelain front if desired.
- 10 Moderate price resulting from volume production.



# ALASKA

## Cork-Insulated Refrigerator

Designed for Electric Refrigeration

The Alaska Refrigerator Company, Muskegon, Michigan.

Please send us your new catalog pricing and illustrating your new refrigerators for refrigerating units.

We are ☐ Retailers ☐ Wholesalers

Address.....

Name.....

The unit we handle is the.....

## DENT HARDWARE

Manufacturers of High Grade  
Refrigerator Door Hardware  
for Over Thirty Years

THE DENT HARDWARE CO., FULLERTON, PA.



## Refrigeration Outgrows Sideline Class In Plumbing-Heating Business

Milwaukee Contractor Goes After Business with Direct Mail, Newspaper and Window Display Advertising—and Gets It

By D. M. Krause

MANY plumbing and heating houses sell oil burners as a sort of sideline. The Hahn Plumbing & Heating Co., Milwaukee, Wis., took this up to make the plumbing business good all year round. But the firm was unlucky in selecting an oil burner that disappeared soon after its introduction on the market. John L. Hahn, president of the company, did much investigating to discover another sideline. At last he hit upon the idea of selling electric refrigerators and since that time his business has grown to be more than a sideline.

The work of installing refrigerators fell right in line with his usual work, and sales were comparatively easy. Wherever new jobs are done in plumbing or heating, electric refrigeration is recommended. In this way most of the sales are made, according to Mr. Hahn. A new house, with new plumbing and heating and all the other accessories, is never complete without an electric refrigerator, is the belief of Mr. Hahn. It is along this policy the firm does its business.

### A Separate Refrigerator Sales Record

The refrigerator sales are treated as a separate unit and a complete record is made of each sale, with the profits, cost of installing, servicing and other details. From this Mr. Hahn is well able to judge whether selling refrigerators in connection with his other work is profitable or not.

In going into the sale of refrigerators, the first thing done was to send circular letters to customers in the plumbing and heating business. "My record as a plumbing and heating fitter was clean, and I received many inquiries," said Mr. Hahn. "I have since sold refrigerators to some of my oldest accounts."

When an inquiry is received, Mr. Hahn himself, or his son Clarence, a graduate of Marquette University of Milwaukee, at once follows it with personal calls and demonstrations. Most of the old accounts are well known to the firm, so that the problem of getting an entree is made comparatively easy.

Direct mail and community newspaper advertising serves to bring in new customers. In this way the trade of not only old customers is solicited, but also new ones. This form of advertising in connection with the heating and plumbing business is the most productive, according to Mr. Hahn.

### Plumbing Contracts Bring Sales

A new account for a plumbing job is considered a prospect for an electric refrigerator, if he has not one already. "When we land a contract, we at once make an effort to install a refrigerator as well," says Mr. Hahn. "Often we are able to induce the customer to do this, as we put down the advantages of having an electric refrigerator in a new and modern home. The customer sees it as we do, and the deal is made."

Most of the new jobs done since the firm started to carry electric refrigerators three months ago, have included a unit, and these extra sales have done much to improve their business.

Mr. Hahn has used window display advertising to good advantage. The refrigerator, of course, is the central figure, with a background of colored posters, describing the different points of the machine and illustrating the advantages of having one. Filling out the window are numerous fixtures and plumbing articles, thus putting over the idea that in addition to plumbing, the company sells and installs electric refrigerators.

Mr. Hahn has carried electric refrigerators too short a time to predict what effect

will be produced on his plumbing and heating business, which at present is still the most important to him. But that it will be to his advantage, he firmly maintains.

"The possibilities are too great to be ignored," he says. "It would be folly, at least unbusinesslike, to neglect this field. I am personally interested in this work, and so far I have been more successful than I had hoped."

## BIG PRODUCTION DON'T ALWAYS BRING LOWER UNIT COST OF MANUFACTURE

(Concluded from Page 13, Column 3)

day. My experience is that it can best be solved by breaking up the industry into smaller units at every opportunity, rather than by herding our manufacturing together into great unwieldy organizations.

As time goes on we can certainly expect that our machines will tend to become larger, more complicated, and more expensive, but that need not necessarily mean that our manufacturing plants must tend to grow larger and more complicated in proportion, or that in every instance we must sacrifice the better efficiency and personal initiative of the small factory for those operations which do not necessitate the use of large and expensive machines.

In many instances where the process of manufacture involves the use of one or more big, expensive, high capacity machines, there is no reason why many of the other operations which do not involve the use of big machines cannot be conducted by the smaller businesses. There is no reason why organizations cannot be perfected which will do away with the necessity for the conduct of all operations under a single roof.

As an example, I may cite one of my own businesses concerned with the manufacture of a refrigerator. This refrigerator is made from waterproof steel-faced plywood called Plymetl. In making Plymetl sheets giant presses are required—some so large that they can glue single panels 78" x 192" in one operation. After the panels are finished the first step in producing a refrigerator consists of trimming and grooving a large sheet of Plymetl so that it can be folded into the shell of the box, thus eliminating joints at the corners. The formation of these shells and accurate cutting of the necessary grooves from the raw stock might be accomplished by hand at great cost, but it is much better performed upon very large and expensive machines. The remaining operations, which include folding the shell, installing the monolithic cork, assembling the hardware, and finishing the exterior surface involve no very large or expensive machines, and a very sat-

isfactory plant for this purpose can be completely equipped for only a few thousand dollars.

For this reason we have not undertaken the manufacture of this refrigerator complete in our own plant. Instead, we manufacture the Plymetl and handle the preliminary operation of forming and preparation for folding. These knocked down shells can then be very economically shipped to local manufacturing plants, which are in effect assembling plants, but which can be and are independent plants of comparatively small capacity, which can be operated at much higher efficiency than would be possible in a single big plant large enough to absorb the capacity of the machine required for the initial operation. Breaking up this process of manufacture into smaller units results not only in a higher degree of efficiency and lower cost in the assembling operations, but in a saving in freight charges, crating, damage in transit, etc., which in some cases amounts to as much as 50 per cent of the value of the box.

Other advantages also follow, such as the ability of the local plant to more perfectly satisfy specific local conditions. Some one will suggest that factory branches, owned and operated by the parent company, would prove the same advantages of low shipping costs and intimate contact with local markets and local finishing requirements. That is true, but factory branches are not as efficient as separate companies, for much the same reasons as outlined above. Salaried employees in far distant branches will not produce the results that individual owners of small companies will get.

### Hearty Endorsement

"The ELECTRIC REFRIGERATION NEWS has our hearty endorsement, and we feel that every dealer in electrical refrigeration should be a subscriber."—W. N. Moss, manager, Cisco Home Utilities, Inc., Louisville, Ky.

## SPECIFY ANSUL SULPHUR DIOXIDE

Write Us—

There is a Satisfied User Near You

The Product With a Factor of Safety

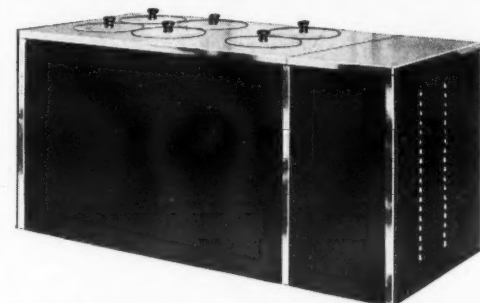
ANALYZED ANHYDROUS SULPHUR DIOXIDE

Absolute Protection for Refrigeration

ANSUL CHEMICAL COMPANY  
MARINETTE, WIS.

Canadian Distributor: Grasselli Chemical Co., Ltd.  
Toronto—Montreal

## ICE CREAM CABINETS



Ready for installation,  
Your Freezing Units

Highest Quality  
Construction  
Monel Trim,  
Copper Interiors

Insulation: Finest Corkboard, 2" on top, 3" sides, 4" ends, 6" bottoms



ICE CREAM MANUFACTURES SERVICE DEPARTMENTS can save considerable money by purchasing our Monel Lid Assemblies complete, or Lid Tops, Bottoms, Rubber Rings, separately. Monel Cabinet Covers, Sheet Metal Panels.

MOTORS METAL MFG. CO., Detroit, Michigan

# CHAMPION ELECTRO ICER

THERE is an old saying that "First impressions are lasting impressions." It contains more truth than poetry. It is the first impression that, with each recurrence, creates desire, or crystallizes a desire, already formed, into action.

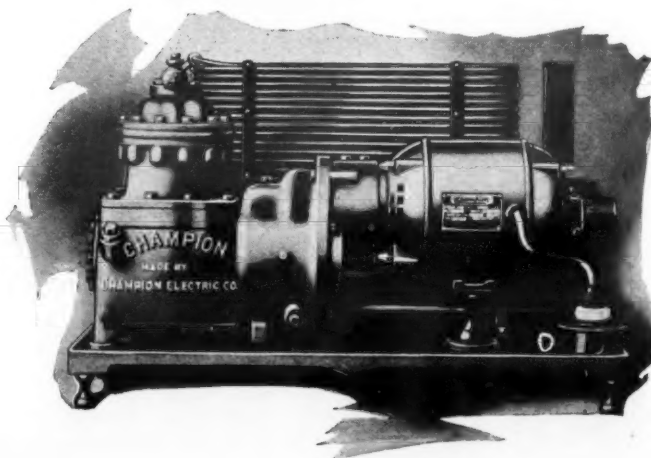
Your first impressions of the CHAMPION are: Sturdiness—Built to last—Powerful—Compact—Completely enclosed—A unit that will run without constant attention.

These are lasting impressions, also, because the CHAMPION has all these qualities, and more.

It is built on scientific principles—not an experiment; not something new and untried; not radically different in design on operation. Instead, designed and built conscientiously with the idea of making every part just a little better, just a little finer than cold, hard figures call for. That's the executed ideal that makes it the CHAMPION.

Made in two models—belt drive—single cylinder and gear drive, two cylinder. Capacities up to 250 lbs. ice-melting effect. Refrigerant—Sulphur-Dioxide, direct expansion.

Good territories are available for live distributors. Write for our literature and our distributor's proposition.



CHAMPION ELECTRIC COMPANY  
Diversey Boulevard and Paulina Street - Chicago

## The New ESCO Electric Milk Cooling Cabinet

Creates Another Market for  
Electric Refrigeration Units

These cabinets are designed exclusively for cooling milk on the dairy farm and are constructed to be used with most any condensing unit on the market. Sold only through Electric Refrigeration Distributors and Dealers and shipped complete with cooling coil, expansion valve and thermostat—ready for attaching compressor.

Descriptive Catalog and Prices  
Sent on Request

ESCO CABINET COMPANY  
Manufacturers  
West Chester - Pennsylvania



## "Estancias" of Argentina Are Fertile Field for "Heladera Electrica"

Buenos Aires Utility Man Tells of Numerous Opportunities Both in Commercial and Domestic Field

It is only natural that the electric refrigeration industry should find a ready outlet in the countries south of the equator and particularly in the Argentine Republic. The refrigeration industry in general has contributed a good deal to the prosperity of a country where the "frigorifico" (packing house) and its products play such an important part in its agricultural and commercial activities. And yet, it will be quite a time before this latest achievement of the refrigeration industry will have gained access to the home of the middle classes.

There are quite a number of reasons which work against realizing this end very quickly. For economic reasons the standard of living is considerably lower than in the United States and the man of moderate means cannot afford to furnish his home with the comfort which his equal on the social ladder up north would consider as fair. Most of the articles and commodities used in everyday life have to be imported and are subject to high duties even though they are not manufactured in this country.

Just to give an idea of conditions we will take, for instance, glass for construction and building purposes which though not manufactured here is subject to a duty of about 45 per cent. Consequently, building costs are very expensive. The construction of a one or two-family house equivalent in comfort to a middle class home in the States is beyond the means of a man of the middle classes, the rentals of apartments in a good quarter of the town are in relation with the cost of building and prices of ground and are consequently very high.

These are some of the reasons why a man has to spend a smaller part of his income for furnishing his home and why the installation of an electric refrigerator in the great majority of middle class homes would be considered a luxury. Under these circumstances the prospects who are and will be interested in electric refrigeration in their home will have to be picked among the well-to-do classes, and even among them the salesman will have to overcome considerable difficulties originating in a different mode of living.

In the first place, refrigeration in the home is not considered a necessity in the same degree as in the States. There are few houses where ice is being used summer or winter, although the latter is much warmer in Buenos Aires than in New York. There are quite a number of very wealthy homes where a block of ice bought from the next grocer's store, wrapped in an old rag and put in an ice box of very obsolete design and equally small insulating value will provide for the necessary refrigeration even in the hottest weather.

Lack of refrigeration is chiefly responsible for the lack of "cold cuisine" in the South American menu, though iced desserts and salads would provide a very pleasant change in summer time. No dry law has been invented yet south of the equator, and if anybody wants a cool drink—a real drink—he gets it in the next bar or cafe, so that the ice cube serves less frequently to cool the drinks made from soda and other "liquids" at home, but home made refreshments would be welcome just the same, and well cooled wine, the favorite table beverage in this happy country, would be highly appreciated. Up north the electric refrigerator is fulfilling its mission as a labor-saving appliance, relieving the lady of the house of a lot of unpleasant work. But this feature will be less appreciated in a country where it

is less difficult to get domestic servants. But in spite of the handicaps just enumerated, which might have a certain counteracting influence against broadening the sales of the electric refrigerators, it can be said that almost every installation has been a full success. As said before, there were extremely few ice boxes which would stand a test by the Good Housekeeping Institute, so that people enjoyed all of a sudden a new kind of refrigeration with all its pleasant possibilities which are greatly appreciated now and which create daily new admirers for the "heladera electrica"—the electric ice box as the refrigerator is called here.

The saying that sale must be backed by service holds good for every country, and the electric refrigeration industry was favored by luck, inasmuch as the pioneers who opened up the country for the new industry were firms of first class standing, who saw at once the great possibilities offered in the Argentine market. Most of them have branch offices and agents all over the country, where service stations were established with mechanics trained in the central service station in the Capital, so that electric refrigerators are running now in the homes on the Atlantic Coast in the East, in the Cordilleras in the West, up north in the Chaco and down south as far as Bahia Blanca.

There are comparatively few centers of population where a ready market exists for electric refrigeration, but a fertile field can be opened up in the rural districts on the numerous big-sized farms—the "estancias." Some of them have installed ammonia refrigerating machines, but the majority either depend on the small ice plants which are scattered over the country, or have to do without ice. These estancias generally generate their own light and power with a plant to which an electric refrigerator can be easily connected, provided the equipment is of sufficient capacity.

The difficulty which hampered the development of electric refrigeration in the "campo" up to the present was the service question. Many of these estancias are situated at a long distance from the next railway station which can be reached only by several hours' motor car ride. The station again, in many instances, could be reached by train only two or three times a week, and if any trouble in the functioning of a machine developed the dispatching of a mechanic was a costly affair for the firm and an unpleasant inconvenience for the customer. For this reason some firms refused to install a machine on an estancia which could not be easily reached.

But it should be possible to overcome this difficulty. The people on the estancias are used to taking care of quite an amount of machinery, as agricultural machinery of very modern construction is used for cultivating the fields and for taking care of the harvest, and a mechanic cannot be called whenever a machine breaks down. As a refrigerator compres-

sor is of a certainly much less complicated construction than a tractor or a thrashing machine, there should be no difficulty in installing a refrigerator on an estancia "for self-service," furnishing the owner or his mechanic with proper instructions and an adequate set of tools. As spare parts or new charges could always be had from the branch or agency the "estanciero" could easily service his machine himself.

It can be seen that a number of difficulties will have to be overcome before it will be possible to make the absorptive capacity of the South American market equal to its importance. In a few words it can be said that the electric refrigerator at the present high prices, which partly are a consequence of the high duties on imported refrigerators, must be considered a luxury which only a few people can afford, but it will be welcomed as the "necessity in every home" as soon as the price goes down to the level at which a necessity can be bought.

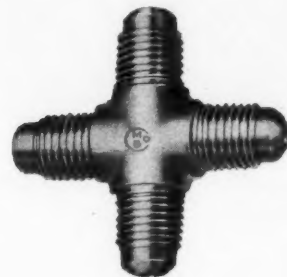
A good deal has to be accomplished yet in commercial refrigeration in this country. While ammonia machines take care of the refrigeration needs of the big hotels, restaurants, meat markets, etc., little has been done yet in the small butcher's or grocer's store. Some of them here use ice boxes of very inferior construction, many have no ice box at all, but all are highly impressed by electric refrigeration. It is for this reason that it is not only necessary to sell the equipment, but the box must be sold as well. Imported boxes are pretty expensive on account of the duty, and there are extremely few firms here who can make a box which will meet American standards. The market and its possibilities is certainly very promising, not only in butcher's and grocer's installations, but also in ice cream cabinets and display cases for bars and cafes. However, its full exploitation will not be possible as long as prices make electric refrigeration inaccessible to the great mass of smaller trades people.

## Mueller forged Fittings FOR MECHANICAL REFRIGERATION



UNION NUT

This nut is made to meet the demand for an exceptionally strong fitting.



CROSS

A complete line of fittings are carried in stock—always, for quick shipment.

Mueller fittings can be supplied to suit your special requirements.

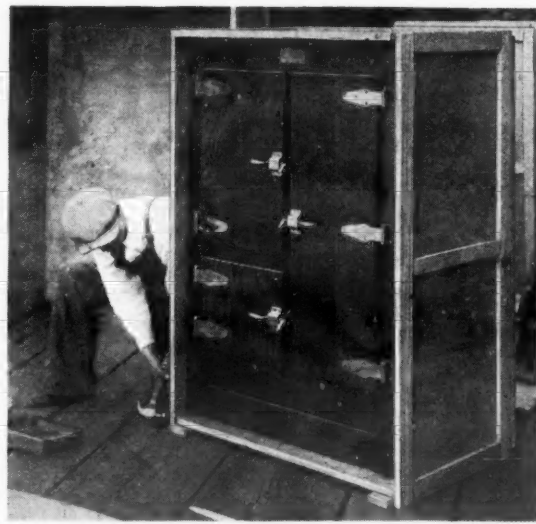
Send us samples or blue prints for quotation.

**Mueller Brass Co.**

PORT HURON, MICH.

THREE GENERATIONS OF BRASS MAKING

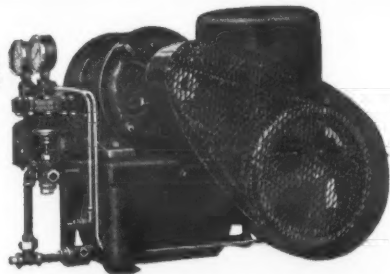
# Atlas Refrigerator Cases In the Warehouse



Refrigerator manufacturers report that refrigerators packed in Atlas Refrigerator Cases occupy more than 20% less storage space than when crated the old way. And they can be piled to any height. Better protection from warehouse dust and the chance blows that might injure the refrigerators are other storage advantages of Atlas Cases.

Atlas Cases are delivered in shook—shipments are prompt—and they can be assembled many times faster than ordinary crates. As for protection in shipment—they are the safest refrigerator containers made and there's a freight saving on every shipment.

## A Vast Sales Market Ready For You



Merchants everywhere need compact, reliable, efficient commercial units for their display counters, refrigerators, florist boxes, ice cream cabinets, etc. You can greatly increase your sales volume and profits by selling Excelsior  $\frac{1}{4}$ ,  $\frac{1}{3}$  and  $\frac{1}{2}$ -ton units.

You can sell them with entire confidence knowing that they are thoroughly perfected and practical commercial machines.

Each Excelsior becomes a permanent fixture of the store in which it is installed, soon repaying the initial cost and having a big resale value over a period of many years.

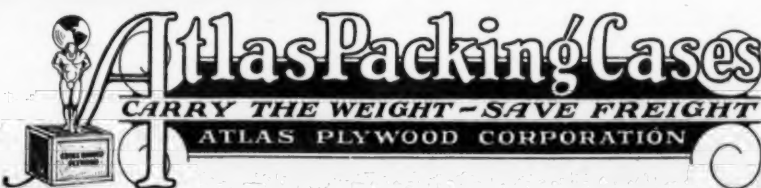
The Excelsior line offers you new opportunities for business expansion and profits. May we tell you the rest of the story?

**Excelsior Motor Mfg. & Supply Co.**

Refrigeration Division

3701 Cortland St.,

Chicago, Ill.



Park Square Building, Boston, Mass.

New York Office - 90 West Broadway  
Chicago Office - 649 McCormick Building



## ELECTRIC REFRIGERATION NEWS

The Business Newspaper of the Electric Refrigeration Industry

PUBLISHED EVERY TWO WEEKS BY

BUSINESS NEWS PUBLISHING CO.

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MARCH 28, 1928

## Knocking Competitors—Does It Pay?

The following letter received from a bank official in an Illinois city points to a moral which might well be pondered over by every manufacturer, distributor, dealer and salesman in the electric refrigeration industry:

"Will you please advise me the results of your tests of the various types of mechanical refrigerators as to economy, efficiency, long life, freedom from trouble, etc.

"I am in the market for a mechanical refrigerator, but the claims of the representatives of the various companies are so conflicting that I am all confused as to the merits of the different types. Our local power company offers to install a Servel gas refrigerator for a trial if I care, but I am told that the principle of gas refrigeration has been tried years ago and discarded. With reference to the electric type, I have in mind the General Electric, Superior, Zerozone and Frigidaire, but here again I am told that the General Electric is going to discontinue the present style with the unit on top for one with the unit at the bottom.

"Any information you will give me will be greatly appreciated."

In a market so far from even a theoretical point of saturation, it is difficult to understand how anyone vitally interested in selling electric refrigeration equipment can hope to attain any degree of success by conscious effort to undermine the growing public confidence in this service. With everyone agreed that the biggest job confronting the industry is to "sell the IDEA of electric refrigeration to the public," it would seem that ordinary common sense would dictate a generous attitude toward others who are helping accomplish the task.

No new product can become popular unless people start buying it. Fortunately, people have started buying electric refrigerators. Electric refrigeration is really becoming popular. This is evidenced, not only by sales, but also by the fact that electric refrigeration has become a part of popular conversation. It is rapidly becoming the vogue, the proper thing in all well regulated households. The trend should certainly be encouraged. Who would call himself a salesman who tries to dam a buying wave which flows in his direction.

If there are new, raw, green salesmen who are not aware of the situation, it should be pointed out that practically all the well known makes of electric refrigerators are actually giving good service. In support of this statement, we offer the testimony of public utility executives who are in a position to obtain complete and accurate information and who have taken the trouble to do so.

If any type or make of electric appliance causes dissatisfaction to customers, the electric light and power companies are sure to know about it. Furthermore, they are a cautious and conservative lot, as every electric refrigerator manufacturer well knows. They are not given to riotous enthusiasm for every new device which happens to consume current, although inventors and promoters of new appliances are frequently surprised to discover this fact. Even a year ago, at the meeting of the N. E. L. A. Refrigeration Committee in Chicago, there was much talk about the cost of servicing electric refrigerators and some doubt as to just how much grief might ensue. But at the recent meetings of the same committee, experienced central station executives freely expressed the opinion that the leading makes of electric refrigerators are now practical and reliable—a form of electric service may be recommended without fear of consequences.

It is now well known that nothing stimulates the buying impulses of prospects quite so much as a new electric refrigerator in the neighborhood. Every sale makes it easier to make another sale in the immediate community. It does not follow that all will buy the same model and make. The women, bless 'em, have a habit of wanting what the neighbors have—the same thing, but different. Preferably something slightly better.

Referring to the Illinois banker, whose letter appears above, it is to be hoped that Mrs. Cashier will soon be made happy with some kind of an electric refrigerator. But until Mr. Cashier can rid his mind of the influence of some very poor salesmanship, the neighbors will be deprived of a potent urge to sign on the dotted line.

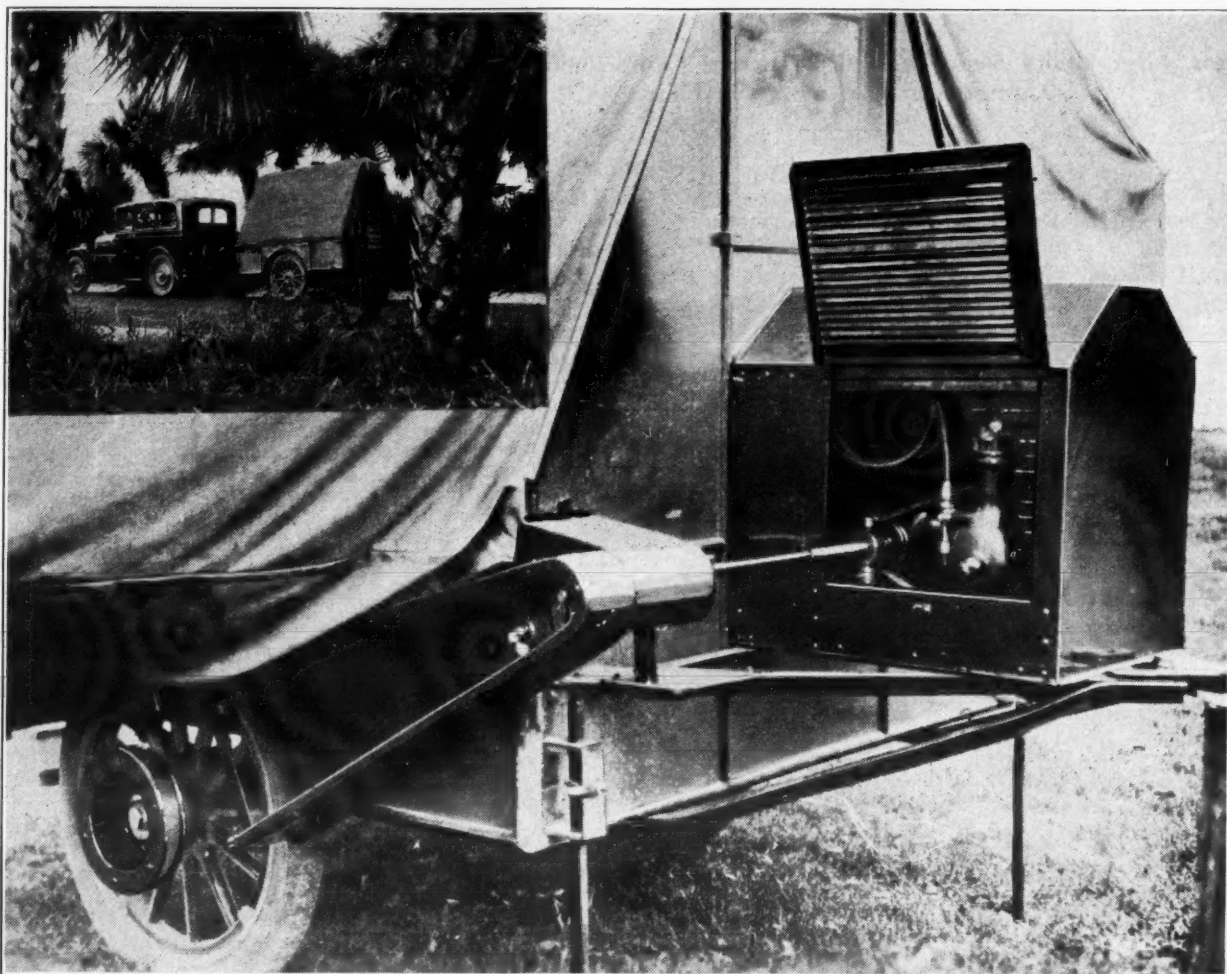
If, perchance, the electric refrigerator salesmen have knocked so hard and so long that they have completely ruined what was obviously a perfectly good prospect, let us hope that Mr. Cashier will give the gas machine a trial. And if he does so, let us hope that it works beautifully so that another influential citizen will be sold on the importance of food protection in the home. May we also dare to hope that a misguided salesman will in some manner discover his error and will profit thereby.

Note—In regard to the rumor about the General Electric machine, which appears in the above letter, ELECTRIC REFRIGERATION NEWS made inquiry in order to secure authoritative information on this point. The reply received from P. B. Zimmerman, sales manager of the Electric Refrigeration Department, General Electric Co., under date of March 14, 1928, may be of interest to readers:

"It was very good of you to write me as you did on March 12, asking that we answer the propaganda that has been started by competition and which is directed at our new refrigerator with the unit on the top.

"We now have more than 50,000 satisfied users of this refrigerator and quite naturally we have no reason to change this model or design. We now have seven factories building a tremendous production for 1928 and every refrigerator will have the unit on the top."

## Ice Cubes Made En Route with this Novel Combination of Automobile and Copeland Unit



Refrigeration while auto touring has been effectively solved through installation of a Copeland electric refrigeration unit attached to the camping trailer of a motor car. This outfit, which has been in operation since the first of December, is now on a two-year tour, is now somewhere in Florida, and its owners, Mr. and Mrs. H. E. Ransier, of Manlius, N. Y., report most satisfactory results.

The refrigeration unit was installed by the B. I. Cooper Sales Co., of Syracuse,

N. Y. A standard Copeland compressor unit was attached to the front of the camping trailer on a metal frame and covered by a hood. This compressor unit then was connected by a gear and belt to a drum on the trailer axle, providing the motive power for circulation of the refrigerant instead of the usual electric motor. When a sufficiently low temperature is obtained the gear is thrown into neutral.

The unit will hold its cold for from 24 to 48 hours, insuring refrigeration for a

couple of days in camps.

After reaching Ft. Myers, Fla., it was decided to camp longer and the matter was put up to A. V. Simpson, Copeland service man with Yowell-Drew Co., at Orlando, who solved the problem by attaching an extension shaft with proper pulley to the right rear wheel of the motor car, and using a belt to the trailer. Idling the motor, the unit is usually brought to the proper temperature in from 20 to 30 minutes, Mr. Ransier reports.

## Publicity Man Tells How to Write Copy Acceptable to Editorial Columns

Paramount Issue is Not Whether Material is Published But Whether It Is Read and Believed

REFERRING to the discussion of manufacturers' publicity which appeared on the editorial page of the February 15 issue of ELECTRIC REFRIGERATION NEWS, the following interesting comments on the subject are offered by A. E. Hanson of the publicity department of The International Nickel Co., New York. The suggestions given by Mr. Hansen to manufacturers will also be helpful to distributors and dealers desiring comments upon their activities in local newspapers. He tells how to write copy which will be acceptable to editors of publications and demonstrates his theory in a letter which we are pleased to publish in full below:

"We are not surprised to learn that a number of your readers are somewhat disconcerted over the fact that their products are mentioned less frequently than those of their competitors. A similar condition can be found in many industries, as trade paper editors in general are well aware. Without wishing to usurp your prerogative, we should like to say that personally we find no such trouble in our promotion work regarding Monel metal and nickel. Far from having to plead for editorial publicity, we receive requests from a large and ever increasing number of publications for contributions relating to our products and their uses. This being the case, the following comments may be of interest to those wishing to attain a like happy position.

## It's All in the Handling

"Publicity in the news columns depends largely, and often wholly, upon the handling of the subject. The successful presentation of the dry bones of trade information in popular form requires the combination of sincerity, imagination and writing ability; while some knowledge of the artifice of the story teller is an unquestionable advantage. We do not mean to imply that all material which is published displays any considerable technique. The contrary, perhaps, is the general rule. But we do believe that editors are not only willing but eager to obtain and publish material in which the foregoing qualities are apparent.

"The paramount issue, moreover, is not whether material is published, but whether it is read and believed. The days of reading magazines from cover to cover are gone. Editorial matter, like advertising, is only valuable in proportion to its success in competing for the reader's attention, and the constant reiteration of a company's name or product, divorced from an extrinsic or intrinsic news interest, is certainly no way to attain that end. Such a policy carries within itself the germs of defeat; the discerning frankly recognize its partisan nature and, as may be seen from

your issue of February 15th, the reaction of competing firms creates discord within the industry.

## News Interest Essential

"The publicity work of The International Nickel Company is entirely free from this vital defect of obvious self-seeking. While we afford the fullest measure of support to our customers and carry out much co-operative publicity with the companies which standardize on our products, we are always careful to see that if the subject does not possess sufficient news interest in itself, an external interest is provided to put the story over. This policy characterizes both the material which appears in our own journal, *Inco*, and that which we furnish to other trade papers.

"The above remarks refer to editorial publicity only and have no reference to the advertising campaigns we are conducting in the national magazines and trade papers in co-operation with our customers in the electric refrigeration industry. Editorial publicity is essentially different from advertising, which it can supplement but never replace. A subtler technique is demanded but, given competent preparation, the volume which can be obtained is practically limitless.

"In one respect, however, there is a resemblance between our regular advertising copy and the news articles we furnish. Both are almost invariably reprinted and distributed to carefully selected lists of prospects. Thus our publicity is robbed of some of its ephemeral character, and we are able to extract from it the last ounce of benefit to the mutual advantage of our customers and ourselves."

## Electric Refrigeration on New Electric-Driven S.S. California

Electric refrigeration is included as a part of the equipment on the recently launched S.S. California, the largest commercial steamship ever built in the United States. This vessel is also the largest elec-

tric-driven passenger ship in the world, her generators producing enough power to run eight Panama Canals.

Electricity will be used for cooking and refrigerating food and ventilating cabins with cool air in tropic latitudes as well as heating them in cold weather. A sister ship duplicating the California is now under construction at Newport News, Va.

## J. W. LEIB ESTIMATES 400,000 ELECTRIC REFRIGERATORS IN USE

"It is difficult to arrive at the number of electric appliances now installed in homes and shops, but it has been estimated that well over 36 million are now in use. Electric refrigeration for the home, a relatively recent addition to the large number of electrical appliances, is rapidly taking its place in the household, bringing added convenience to many homes, and nearly 400,000 electric refrigerators are already in use. Radio has taken an important place, with more than six and one-half million sets now in use."

The above statement was made by John W. Leib, vice-president and general manager of the New York Edison Co., at the annual meeting of the Edison Pioneers held on February 11, Thomas A. Edison's birthday. The Edison Pioneers is composed of members who were with Mr. Edison and his enterprises prior to January, 1886; associate members who saw similar service between that date and January 1, 1900; and descendant members whose fathers were members of the Pioneers or were eligible. At the last meeting held at the Hotel Astor, New York City, "Chief" Isaac Krall, approaching his 85th year, an employee of The New York Edison Company and long-time associate of Thomas A. Edison, was a guest of honor. Mr. Edison, who is now at Fort Myers, Fla., sent a message of good-will to the Pioneers.

## DISCUSSES ADVANTAGES OF CONDENSER TYPE OF MOTOR

The efficiency of the single-phase condenser motor, its applications and requirements are discussed in an article by Prof. Benjamin F. Bailey, of the University of Michigan, which appeared in the March 24 issue of *Electrical World*. Prof. Bailey opens the article discussing this increasingly popular type of motor, with a consideration of the use of small motors in such applications as vacuum cleaners and sewing machines as compared with the use of motors of a similar type in electric refrigerators and oil burners. The discussion also brings out the advantages to both the central station and the purchaser of the appliance of the condenser type motor.



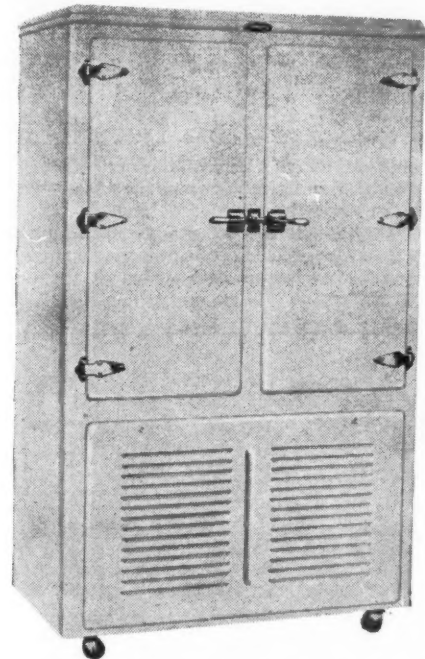
# Vogue of Color and Decorative Effects Dominates New Lines of Electric Refrigerators Offered by Leading Manufacturers for 1928 Season

## COLORED CABINETS AND WATER COOLERS COMPLETE SERVEL LINE

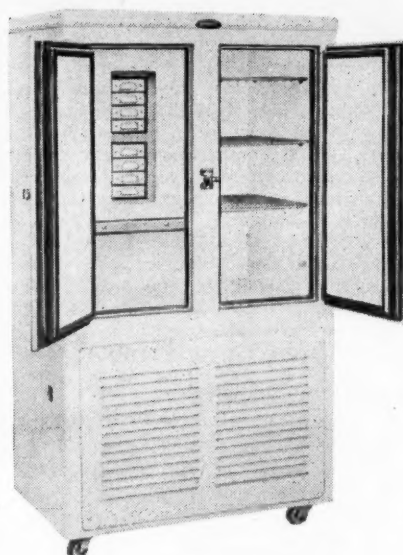
### Special Application of Colors Gives Multi-Tone Effect

With the regular production of the new Servel water coolers, Servel Sales, Inc., is furnishing dealers with electric refrigeration equipment for nearly every domestic and commercial need.

The new H-5 colored Servel is compact in design, and this coupled with its simplicity of mechanism, makes this model an appropriate piece of equipment for the small house or apartment.



Servel 10 cubic foot model



Servel 7 cubic foot model

Color, applied by Servel's system, is used to produce four new multi-tone colors—silver grey, biscay blue, ivory tan and crystal green. These colors are being applied to the S-Line of Servels as well as to the new H-5 and the water coolers. White lacquer finish is also furnished on any model, where it is desirable to adhere to the more conventional standards.

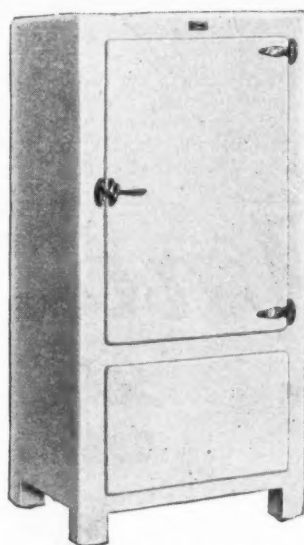
The new Servel water coolers are furnished in two types: one, for the use of bottled spring water, and the other, the filter type, for direct connection to the water supply system. Both types are mounted on stands that keep them well off the floor and are refrigerated by the Servel model 12-A Unit, having a 1/6 h.p. motor. These coolers have a minimum hourly capacity of 3½ gallons, cooled 30°.

Servel units of the larger sizes, Models 50-A, 75-A and 100-A, are being built for use with refrigerators and display cases for meat markets, restaurants, grocery stores, and florists' shops. Co-operating with architects and dealers

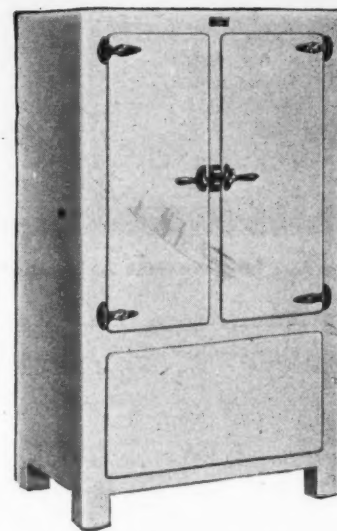
in the solution of refrigeration problems of all sorts, the Servel engineering department, located at Evansville, Ind., not only suggests definite equipment to meet given conditions, but actually prepares plans for the dealer, rendering consulting engineering service on any phase of refrigeration installation.

## WELSBACH ANNOUNCES MODELS NEW IN COLOR AND CONSTRUCTION

In addition to the recently announced model C-155 Welsbach low pressure refrigerator priced at \$225 installed, the Welsbach Co. now announces model C-150, the installed price of which is \$250. The new model, like model C-155, is operated by 1/6 H.P. motor and embodies the wear-resisting principles of low pressure, slow speed operation and flooded lubrication with other salient features of the Welsbach standard line. It differs from



Welsbach Model 160



Welsbach Model 170

model C-155 only in the vitreous porcelain lining of the food chamber, which has a food storage capacity of 5.25 cubic feet.

This manufacturer also announces new cabinets as follows: model C-160, with installed price of \$300, and model C-170, with installed price of \$355. These models are identical with models C-260 and C-270, respectively, excepting for the substitution of a smaller condensing unit with 1/6 H.P. motor and a 2-tray freezing unit for the larger system in the other models.

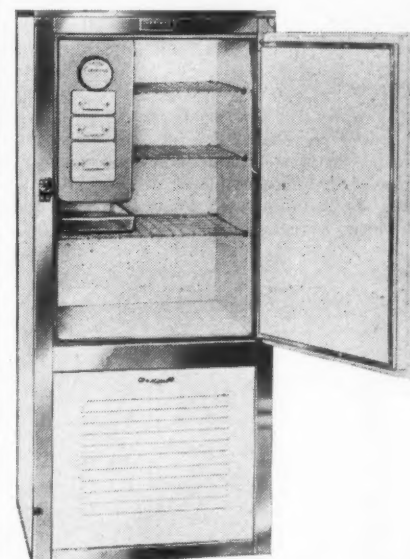
The Welsbach Co. has for some time offered its equipments in white or gray finish. It has now undertaken to produce some striking color effects in keeping with the spirit of the times. At a recent display in a window of the United Gas Improvement Association, Broad and Arch Sts., Philadelphia, a tinted Welsbach refrigerator was displayed in company with a colored Welsbach water heater, a colored gas range, and other kitchen equipment. The entire effect was extremely pleasing to the eye, and attracted much attention and favorable comment from the people who stopped to admire the display.

## COPELAND PLANS FOR BIGGEST YEAR WITH NEW LINE ADDITIONS

With the new addition to its line, Copeland Products, Inc., Detroit, is looking forward to the biggest year in its history. W. D. McElhinny, vice-president in charge of sales, declared in a statement given out following the company's convention which brought its distributors from all over the United States and Canada to Detroit last month.

Copeland's new line now includes: the new Copeland all-metal line comprising four cabinets in porcelain and enamel; the Copeland-Seeger line of six all porcelain cabinets; The Copeland de luxe line comprising five all porcelain cabinets with six optional color selec-

(Concluded on Page 18, Column 2)



Copeland Model N-5-P

## Flintlock Condensers

EFFICIENT—ECONOMICAL—COMPACT

for  
electric  
refrigeration

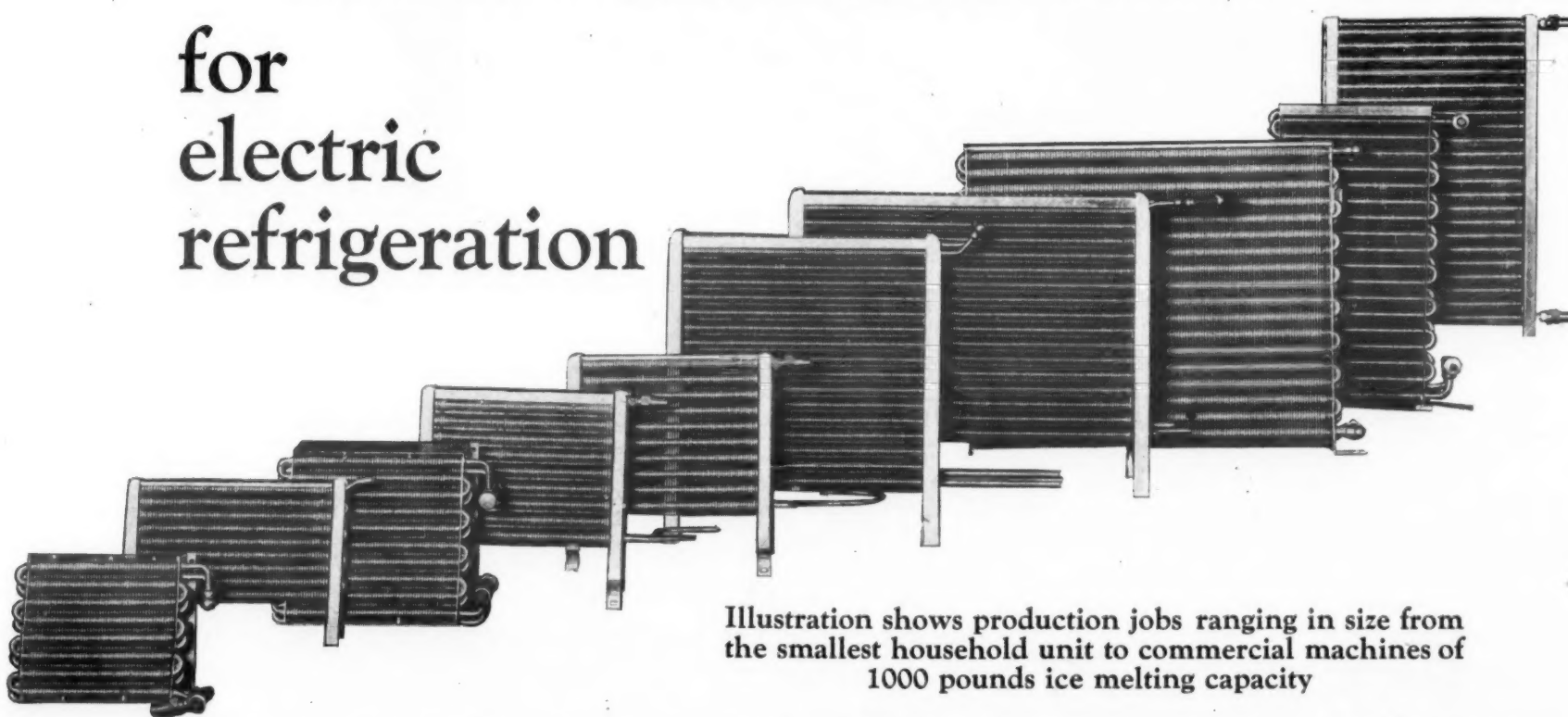


Illustration shows production jobs ranging in size from the smallest household unit to commercial machines of 1000 pounds ice melting capacity

We Are Condenser Specialists—Our Laboratory and Engineering Facilities Are at Your Service

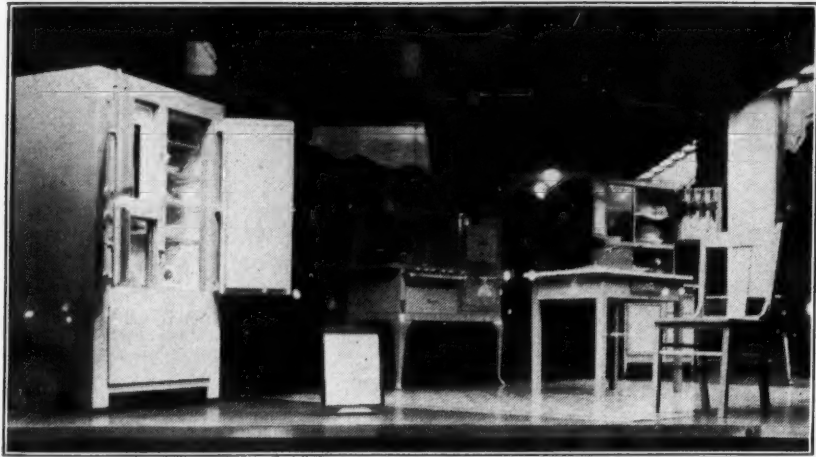
## Flintlock Corporation

4461 West Jefferson Avenue

Detroit



## Welsbach Tinted Unit Stands Out In Colored Kitchenware Display



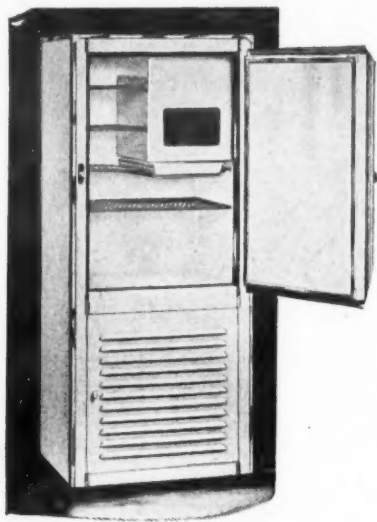
A recent display in the windows of the United Gas Improvement Association, Philadelphia

## NORGE 1928 LINE OF CABINETS APPEARS IN TWO-TONE COLORS

Two-tone color combinations are featured in the new line of Norge all-porcelain cabinets. These are available in sizes ranging from five to sixteen cubic feet.

Incorporated in these new cabinets is the Norge electric refrigeration unit, the compressor of which is of the rotary type, and which circulates the entire change of oil of the compressor through a separate coil in the lower section of the fin-type condenser. The oil of the compressor is thus circulated and cooled, being returned directly over the seal. This feature of Norge has enabled its use in extremely hot temperatures.

The Norge freezing unit is of the flooded



A Norge model for the small home or apartment

type and presents a pleasing appearance, with its white porcelain door, which covers the ice cube tray compartment. This door is mounted on hinges separate from the trays and prevents the accumulation of frost on ice cubes or the trays, and also the possibility of trays sticking in the compartment.



The Norge rotary type compressor unit

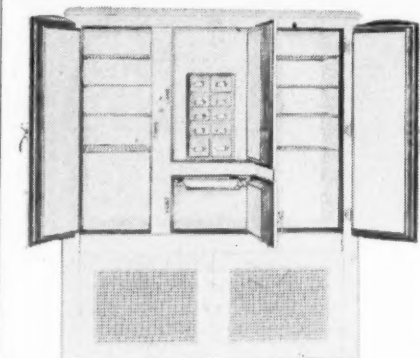
## M. & E. FEATURES NEW BI-TONE DOMESTIC UNITS

The newest line of M & E all porcelain cabinets manufactured by Merchant & Evans Co., 2035 Washington Ave., Philadelphia, Pa., and known as the Bi-Tone models range in size from 5½ to 16 cubic foot capacity and are finished in white porcelain with a trimming of gray. All models are furnished for either remote or self-contained installation.

In addition to the new Bi-Tone models the cabanette apartment house models are available for the small apartment in either the remote or self-contained styles.

M & E water and beverage coolers are furnished in 2, 3 or 5 gallon sizes for either gravity bottle or city pressure water. As in other M & E self-contained installations the compressing unit in these coolers is spring suspended, eliminating noise and vibration.

Use the subscription coupon on page 32.



Copeland 20 cubic foot De Luxe model

## COPELAND LINE ADDITIONS

(Continued from Page 17)

tions; Multiple hook-up for apartment house installation; Two new compressors for commercial installations; The new de luxe colored models, unveiled at the convention by Mr. McElhinny.

These new models are of white porcelain on steel, with easily removable tops which are supplied in six colors: blue, green, yellow, red, gray and buff, as well as plain white. The louvre panels at the bottom are also in color to match the top, and easily interchangeable. Such a color scheme gives the appearance of a delicate line of color, easy to blend with the curtains, walls, woodwork and other furnishings. As a further advantage, it gives its owner a refrigerator which is, in the main, white and therefore dirt can easily be seen and the refrigerator kept spotless. The interchangeable feature makes it possible to shift the color scheme should the owner move into another house and find that it did not blend with the new surroundings.

The thickness of the insulation in the De Luxe line has been increased so that each model is insulated with three and four inches of hydrolined corkboard. There are four inches of corkboard in the bottom and three inches in the sides, top and doors. This results in the refrigerators maintaining their cold over a long period of time.

These cabinets are built with a heavy framework on the inside, which carries the whole weight of the porcelain lining, the insulation and exterior, and also the compressor, which is in the lower compartment. The porcelain lining in all models fits flush with the doors and has a special heavy porcelain rib where it meets the door in order to avoid any chipping. All corners are rounded. The shelving is of extra heavy block tin rods, a departure from the woven type. This provides a level surface for dishes and permits their easy removal. The hardware is of Old English silver finish and provision is made for a place in the door latches for locks, so that one compartment, or all, can be locked securely.

As an added feature, these De Luxe models are equipped with an electric light, switched on from the front of the box, to permit better vision in removing or storing of food. A pilot light, behind an attractively designed prism, warns, should the light be left burning.

All models may be equipped with a vegetable bin and the larger models take a combination vegetable bin and shelf. In this De Luxe line particular care has been taken to provide for the making of ice. The ice-making capacity has been increased to a point where they make almost as much ice at one time as the customer was accustomed to seeing in the old-style iced refrigerator. The Model 20 makes 378 ice cubes at a time weighing 24½ pounds and provides four double-depth ice drawers for freezing desserts, chilling salads or making ice in cakes. There is no drain pipe. A cold tray of pyrex-type glass is provided for crisping salads, storing ice cubes, and such uses.

As to the new multiple units for apartment house installations, Mr. McElhinny announces that they are available now and that many apartment house installations already are in progress.

## HART & BURMEISTER ADD 5 FOOT CABINET

Hart & Burmeister, San Francisco, Calif., manufacturers of "California" electric refrigerators, have added to their line a new domestic model with a cubic foot capacity of 5.6 feet. This unit is finished on the outside with white duco and has an interior of white porcelain. Plywood is used, permitting a construction of clean rounded corners and edges. Corkboard insulation is standard.

The brine tank is of a special design, occupying very little space in the cabinet. The compressor is operated by the new Westinghouse motor, which is automatically controlled and which will not interfere with radio reception. The compressing unit is mounted on heavy pads of felt, eliminating any hum or other noises being transmitted to the cabinet.

The dimensions of the cabinet are width 25 inches, depth 20½ inches, height 56 inches. Other "California" electric refrigerating units are available for use in commercial as well as domestic applications.

## DRY-KOLD COMPANY HAS NEW DISPLAY CASE

The Dry-Kold Refrigerator Co., Niles, Mich., has recently brought out a new type of display case available in either white porcelain exterior and interior or with porcelain interior and oak exterior. The all-porcelain model may be had in either 10 or 12 foot lengths, has no partition in the front glass and may be used with either ice or electric refrigeration.

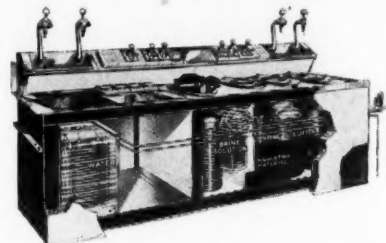
In addition to this new display case, the company manufactures a complete line of commercial refrigerators for grocery stores, restaurants, hotels and similar installations.

## Bishop & Babcock Co. Offers Choice of Refrigeration Systems in Red Cross Creamer Units

That the Bishop & Babcock Sales Co., 4901 Hamilton Ave., N. E., Cleveland, Ohio, has no prejudice in the matter of refrigerating systems is indicated by the fact that they offer a seven-foot ten-inch length metal frame soda fountain with a choice of the "dry system" operated by a Model 50 G Lipman compressor or a Frigidaire equipped unit using brine solution.

In the dry system the ammonia pipe enters the creamer on the right hand and passes through the pump rack, then to the water cooling compartment, next through the storage refrigerator to the brick cream compartment, next to the bulk cream, then out of the fountain. The coil in the water bath compartment is provided with a shut-off valve to enable the user to adjust temperature according to the season. Two large block tin pipe continuous coolers with

operates the motor on the compressor is located on the bulk cream compartment. The thermostat is set for the temperature required for dipping cream, and other temperatures automatically adjust themselves, due to the proper proportioning of pipe.

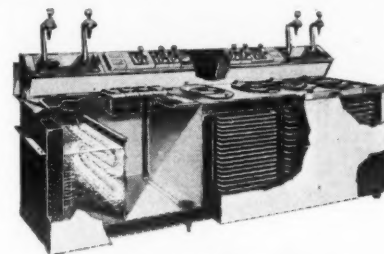


With Frigidaire and brine solution

## FROZONE ANNOUNCES 5 CUBIC FOOT MODEL

Frozone Corp., 709 Chestnut St., Philadelphia, Pa., announces the new Frozone 5 cubic foot storage space unit with white enamel interior and white lacquer exterior. This particular unit is one of 15 different Frozone models in various sizes and finishes in both enamel and all porcelain.

The company also manufactures a self-contained show case for grocers, butchers, etc., the unit being permanently located in the base of the case. All that is needed for the installation of the case is the plugging in of the electric connection. All models are charged and sealed at the factory.



With Lipman Dry System

storage cylinders provide a large volume of cold soda and water. By use of a greater amount of pipe coiled around a comparatively small area, a very low temperature is maintained for brick cream. The bulk cream requires less pipe coils as a higher temperature is needed for dipping. The thermostatic control which

# And, Madame, the Cabinet is a BENJAMIN

10 MODELS  
MANY EXCLUSIVE  
FEATURES  
for Every Residence  
or Apartment House  
Requirement



HERE is the key to more refrigerator sales: When the salesman has said, "And, Madame, the Cabinet is a Benjamin," he has summed up all that can be said for efficiency, reliability and lasting satisfaction. It is the beginning of that "word of mouth" advertising that means prestige for the dealer and repeat sales for the house.

Let us send you full information on the extra profit, protection and sales help policy that is spelling a big success for dealers and distributors of electric refrigeration.

Benjamin refrigerator cabinets are all porcelain throughout. A seamless, sanitary interior, with no place for moisture to penetrate, food morsels accumulate, or decay ensue. Compartment levels are raised above the door sill making it easy to thoroughly clean the interior. Exterior is glistening white porcelain with striking black enamel trim. Pure sheet corkboard insulation. Hardwood, rabbeted, glued and screwed frame. Interior dome light. Heavily insulated, air-tight gasketed doors. Oversize hardware, nickelplated on brass. Automatic trip locks.

Refrigerator Cabinet Division

Benjamin Electric Mfg. Co.

120-128 SOUTH SANGAMON STREET CHICAGO, ILLINOIS



## Excelsior Machine Fills Gap Between Small Household Unit and Large Commercial Equipment

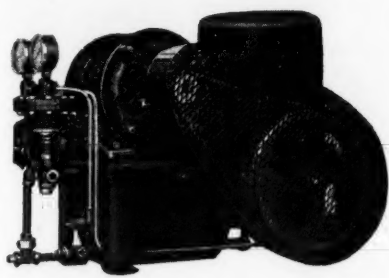
The Refrigeration Division of the Excelsior Motor Mfg. & Supply Co., 3701 Cortland St., Chicago, Ill., devotes its attention exclusively to the commercial market with machines of  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ -ton capacity designed to fill the well defined gap which has existed between the household sizes and heavy commercial machinery. Excelsior refrigerating machines are all of the two-cylinder, water cooler ammonia type.

A distinctive feature of the Excelsior construction is the complete submerging of the compressor in the cooling water. This maintains the crankcase oil, stuffing box, etc., at the temperature of the cooling water, giving increased efficiency and longer life of working parts. A unique oil seal reservoir is incorporated in connection with the stuffing box, equipped with a thermo-siphon oil circulating system.

A booklet giving a comprehensive description of Excelsior refrigerating machines calls attention to six requisites for a successful compressor, namely:

1. It must be made from materials that will withstand the pressures and retain the refrigerant.
2. The volumetric efficiency of the valves must be high.
3. The friction losses must be low.
4. The crankcase oil must not pass over into the low tide.
5. It must have a stuffing box which will not liberate any of the refrigerant or require any service.
6. The design must be sturdy and the materials suitable for long years of useful service.

The construction details and design features by which these requisites are accomplished in the Excelsior machine, are described in the booklet.



Excelsior Commercial compressor

## WAYNE INAUGURATES NEW SPECIAL COLOR CONSULTING SERVICE

The Wayne Company, Fort Wayne, Ind., has inaugurated a special color consulting service so that when desired Wayne cabinets can be furnished on special order in any color or shade to harmonize with the decorative scheme which the purchaser has in mind. Optional decorative designs, even hand-painted, are available. The usual all white porcelain exteriors in all sizes are included in the Wayne line.

During the past year several new mechanical features have been adopted. Improvements in lubrication which are said to solve the oil problem existing in compression type systems have been developed. Vibration noises have been practically eliminated through methods of motor suspension.

Several cabinets have been recently added to the Wayne line and capacities of compressor units have increased so that there is now a Wayne unit designed for practically every refrigerating need.

Distribution of Wayne electric refrigerators in 1928 will be through factory branch organizations in metropolitan centers and through direct dealers' connections in the smaller cities. A combination franchise on both the electric refrigeration units and Wayne oil burners is offered to dealers.

## ALLISON MACHINE IS HERMETICALLY SEALED

The Allison unit made by the Domestic Electric Refrigerator Corp., 2 West 46th St., New York City, is a hermetically-sealed system without gears, belts or reciprocating parts. A two-stage rotary compressor is used driven by a  $\frac{1}{2}$  horsepower motor. The machine is assembled complete, charged, put into the box, and tested before leaving the factory.

In the event of faulty workmanship or material on any particular unit, the complete mechanical part of the system is taken out in its entirety and returned to the factory for servicing. There are no adjustments which can be made either by the distributor or the user. In the event it is necessary to replace a faulty unit with a new one, the change may be made easily, since the motor and pump assembly weighs only 42 pounds.

Sales of Allison unit will be handled entirely by distributors who will do both a wholesale and a retail job in restricted territory. The whole plan of merchandising by the Domestic Company has been built on the premise that distributors and dealers must be able to make money. A national advertising campaign is planned to support the work of local distributors. The company was incorporated in July, 1926, and is now actively engaged in building up an organization to merchandise the machine.

## WHITE MOUNTAIN CABINETS AVAILABLE IN 5 STANDARD COLORS

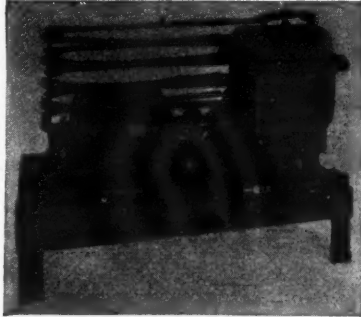
The Maine Mfg. Co., Nashua, N. H., manufacturers of White Mountain refrigerators, has a plan whereby purchasers may have any model of the White Mountain stone white de luxe refrigerators in any one of five colors. Not only may the cabinets be had in a single color, but they may also be had with the doors in one color and the rest of the cabinet finished in some harmonizing shade. The standard colors are jade green, ivory, gray, blue and the usual white. Where the customer desires to have a refrigerator match exactly with the decorations of the kitchen, special paint will be mixed to match samples provided, thus making it a custom finished unit.

In addition to the de luxe line of refrigerators which are designed for either ice or electric refrigeration, a wide variety of less expensive models is available and may be had in practically any finish either interior or exterior.

## CONDENSER FAN IS ELIMINATED IN NEW CHILRITE MACHINE

The Narragansett Machine Company, Pawtucket, R. I., in presenting the Chilrite unit this year, the ninth season, has a number of new features to offer. Still maintaining the original principles of simplicity and the rotary gear type of compressor, it is accomplishing the condensation of the sulphur dioxide after compression without the use of a fan, thus providing a direct connected unit of very simple structure without the need of the belt and fan moving parts.

The design of the compressor has been changed somewhat, so as to confine it to the smallest possible space,



Chilrite Compressor

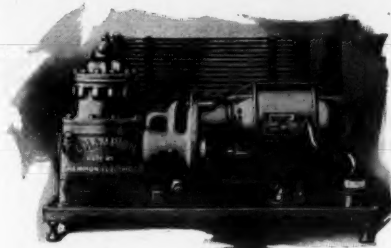
realizing that this is an important factor, especially in cabinet work, with the small type of machine.

The line this year includes a range of four machines adaptable for boxes from eight to five hundred cubic feet. The company is using cabinets built by national manufacturers and has a wide variety of models to offer.

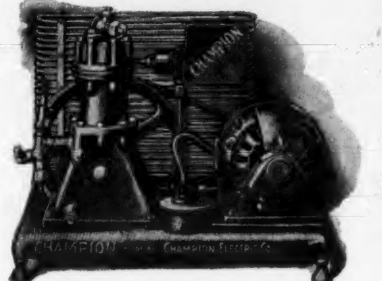
## Champion Offers Two Compressor Models in Four Sizes and Four Cooling Units in Seven Sizes

Champion Electric Co., Paulina and Diversey Parkway, Chicago, Ill., has lately taken over the complete distribution of Champion Electro Icer equipment form-

is skimmed off automatically and returns to the compressor through the low side or suction line. No oil traps or other delicate mechanisms are required.



Champion models 10 and 12



Champion models 6 and 8

erly handled directly by the Champion Electric Co., of St. Louis, Mo., a division of the Champion Shoe Machinery Co. Champion units are offered in several sizes of Seeger cabinets ranging from six to thirty-five cubic feet capacity. The compressor line consists of two models, each in two sizes. New models are now in the development stage and will be announced later. Cooling coils are made in four models, having two, three, four and five ice cube trays. Additional tubes in three models provide a total of seven capacities.

The Champion employs the flooded system of refrigeration, the cooling coils serving as a storage reservoir for the sulphur dioxide refrigerant. A float valve in the coil head automatically maintains the proper liquid level. A portion of the oil used in the compressor crank case circulates with the refrigerant and passes into the coil. It floats on top of the refrigerant,

The Champion compressor units models 10 to 12 employ a single gear drive and has no belt or fan. All moving parts are completely enclosed, and the only lubrication required in service is that of oiling the motor every six months. Model 10 uses a  $\frac{1}{4}$  horsepower motor and No. 12 uses a  $\frac{1}{2}$  horsepower motor.

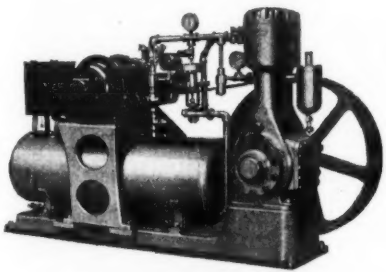
Compressor models No. 6 and 8 are single cylinder, reciprocating type, V-belt drive with a  $\frac{1}{6}$  horsepower single phase, induction-repulsion type motor.

### Bright and Newsy

"We have on file here in the office a complete set of copies of the paper and read each new copy as it appears, with interest. We surely want to compliment you for getting out a bright and newsy sheet."—W. G. Paulson, advertising manager, Excelsior Motor & Mfg. Supply Co., Chicago, Ill.

## LIPMAN ANNOUNCES UNIT WITH 10 H. P. MOTOR

The General Refrigeration Co., Beloit, Wis., has lately announced their Lipman model 1010 unit, illustrated here. This unit has full automatic control and is of a



Lipman 10 H. P. Unit

capacity which requires a ten horsepower motor. The entire mechanism, including motor, compressor, condenser, receiver and controls, is mounted as a unit on one base, resulting in a machine 31 inches wide, 89 $\frac{1}{4}$  inches long and 53 inches high.

This compactness makes it possible to take the entire unit through an ordinary doorway. This model is also favored because of its rigid base, which makes it unnecessary to build a special foundation. Lipman machines are manufactured in sizes ranging from a capacity of one to twenty tons.

## SUPER-COLD CASE ATTRACTIVE WITH BLUE TILE TRIMMING

The California Butchers Supply Co., Los Angeles, Calif., which organization will change its name on April 1 to the Commercial Refrigerator Manufacturing Company, has taken up with the trend toward Color and offers its Super-Cold display case trimmed in blue, red and black tile. From the front of the case an unobstructed view of meat displayed is gained through two large panels of plate glass which run from the top of the cabinet within approximately ten inches of the floor. These are bordered by tile of a bright shade of blue, providing a pleasing contrast to the red and white of the meat contained within the case.

Meat is displayed within the case on three different levels, and the manufacturers claim that through the application of a new process the distribution of refrigeration without circulation has been worked out, which raises the coil temperature and at the same time reduces shrinkage and discoloration of foods contained within the case.

This case is manufactured in five different sizes and comes complete with coils so that it need only be connected with the compressor of suitable capacity.

The company is now starting construction of a new factory, which will have a capacity of fifteen electric cases and twenty refrigerators per day. It is located at E. Adams and Santa Fe Streets, Los Angeles, and will be a one-story structure covering a space of 420 by 630 feet when completed.



## Partners In Your Reputation

Upon us rests, in part, the stern responsibility of maintaining our customers' reputations—for reliability. To this end our tubing is drawn so that no customer may have cause to doubt our worthiness as a partner in his reputation.

**WOLVERINE TUBE COMPANY**  
1431 CENTRAL AVENUE DETROIT, MICHIGAN

### Sales Offices

Atlanta, Ga., 411 Georgia Savings Bank Bldg.; Chicago, Ill., 129 S. Jefferson St.; Cleveland, O., 602 Hunkin-Conkey Bldg.; Dayton, O., 908 Dayton Savings Bank Bldg.; Denver, Colo., 1715 California St.; Los Angeles, Cal., 224 E. 12th St.; Rochester, N. Y., 206 Central Trust Bldg.

# WOLVERINE TUBE

SEAMLESS COPPER

Members of Copper & Brass Research Association



BRASS & ALUMINUM

Standard Sizes of Copper Tubing Carried in Stock

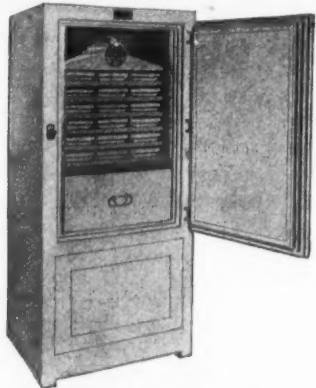


## ELECTRO-KOLD CORP. HAS NEW ICE MAKER AND BEVERAGE COOLER

A new cooler for vending root beer and similar beverages, a chilling unit for use in cabinets up to five cubic feet, and an ice maker having a capacity of eighteen trays with eighteen ice cubes per tray, are recent developments of the Electro-Kold Corp., Spokane, Washington.

The cooler for vending root beer is designed to cool not only the beverage, but also the glasses in which it is served. The sterilizing solution used in connection with the dispensing of the beverage is also cooled through contact with the non-freezing solution contained in the main part of the cooler. This cooler also contains a special coil for cooling drinking water. The capacity of the beverage cooler, based on a 20 degree temperature drop, with the beverage entering the cooler at 65 degrees, is 30 gallons per hour.

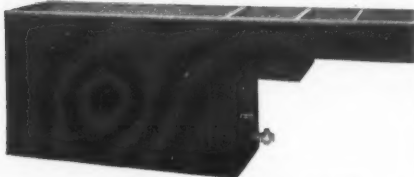
The new domestic cooling unit, number



Electro-Kold ice maker

55, is built in several sizes. The feature of this unit is the small space occupied in the refrigerator. The overall dimensions are 9 3/4 inches high, 6 1/2 inches wide, 14 inches deep.

The new Electro-Kold ice maker is a

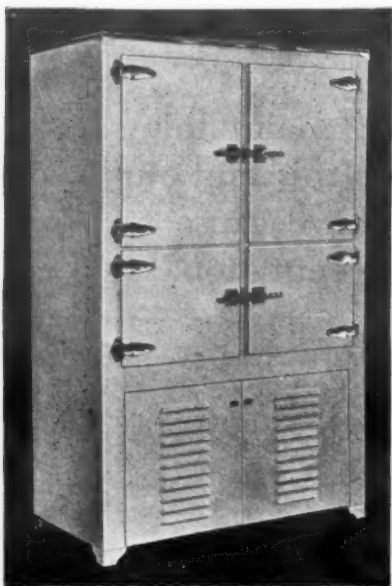


Electro-Kold beverage cooler

type designed for use in hospitals, restaurants, clubs and other places where larger quantities of cube ice are desired than can be produced by the ordinary refrigerator. This unit, with a capacity of 18 trays, each containing 18 cubes of ice, which are frozen in a maximum of 4 hours, is equipped with a reserve storage tray of a sufficient size to hold one entire freezing for use while another quantity of ice is being frozen. The overall dimensions of the ice maker unit are height 19 1/4 inches, width 18 3/4 inches, and depth 14 inches.

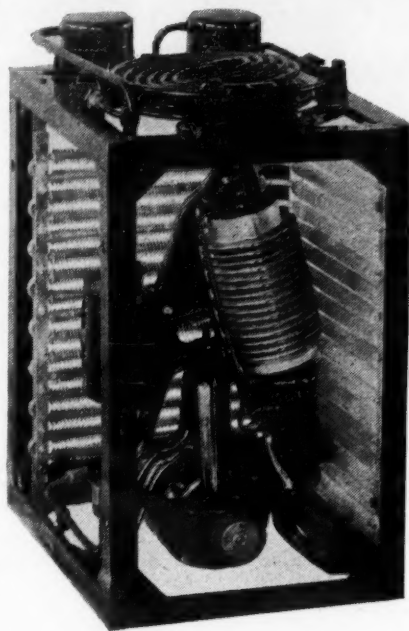
## REX MFG. CO. EQUIPPED TO CARRY OUT SPECIAL COLOR COMBINATIONS

The most recent development in cabinet beauty offered by the Rex Mfg. Co., Connersville, Ind., is the furnishing of cabinets in color. This company is equipped to carry out any color combination or special design which may be desired. In addition to the very comprehensive line of



Rex Cabinet

cabinets for apartments, the Rex Mfg. Co. offers a complete line of refrigerators for the modern residence. These cabinets have food storage capacity ranging from 5 cubic feet to 15 cubic feet and are available in white lacquer or white porcelain exterior or white enamel or white porcelain interior. Corkboard insulation is available in all models.



Savage Compressor No. 18

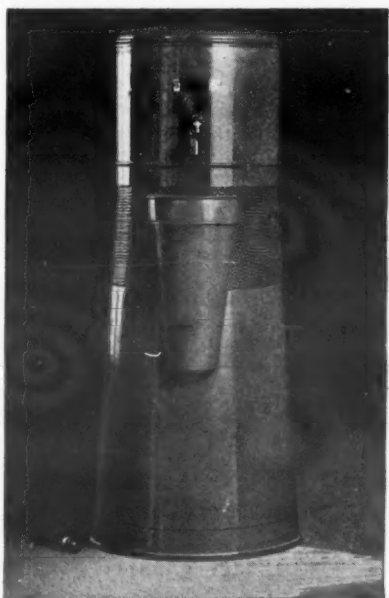
## SAVAGE BRINGS OUT SELF CONTAINED ICE CREAM CABINETS

In addition to the standard Savage line of ice cream cabinets manufactured by the Savage Arms Corp., Utica, N. Y., this company has introduced this year a line of unit cabinets with a compressor of new design. This new line includes two, three and four hole ice cream cabinets, with the compressor attached. The only installation work necessary with these cabinets is to remove the shipping cases and plug into a light socket. It is not necessary to open valves or install brine, since all Savage cabinets are shipped with the jelly freezing mixture, sealed into the freezing tank. This mixture, it is claimed, does not deteriorate, never has to be removed or replaced, and has unusual refrigeration storage capacity.

The compressor for the unit line of cabinets, model 18, shown here, is very similar in design to the larger model No. 17 compressor, except for the arrangement of the motor drive. The height is the same as that of the model No. 17 compressor, but the width and length have been considerably reduced, so that it requires half the floor space of the model No. 17. Its capacity is approximately 70 per cent of the larger model. Like the model No. 17 compressor, the new model No. 18 is a mercury compressor with friction drive and has no pistons or valves.

## ICELESS COOLER UNIT ESPECIALLY DESIGNED FOR WATER COOLING

After a number of years of experimenting the Cleveland Iceless Cooler Co., Cleveland, Ohio, has developed the Kold Stream water cooler in two types, one for service where city water is to be used and



Iceless cooler for city water

the other where bottle water is used. In developing these coolers, the adaptation of the unit to other uses has not been considered, so that the resulting product is one particularly designed for the work which it is to do.

The capacity of this cooler is larger than is usually required of an individual unit, insuring an ample supply of cold water at all times. A reserve of 3 gallons of cooled water is maintained to care for any momentary large demand. An added refinement is provision for waste for the pressure type cooler in situations which do not permit a connection to a waste line.

## Attended Indianapolis Frigidaire School

Gus Beckmeyer, representing Robert Johnson, Frigidaire dealer in Aurora, Ind., attended the Frigidaire school held at Indianapolis the week of February 20.

## NEW ICE-O-MATIC UNITS IN PRODUCTION AT BLOOMINGTON PLANT

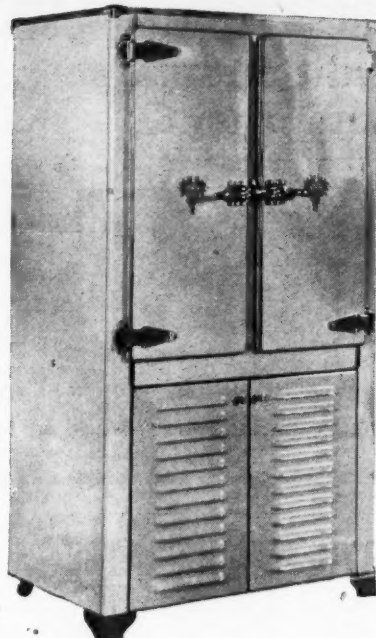
Two hundred units during March and the early part of April is the schedule set by the Williams Oil-O-Matic Heating Corp., Bloomington, Ill., for the production of the recently announced Ice-O-Matic electric refrigerator. One of the smaller colored models, a 6 foot capacity cabinet, done in light green with dark green trimmings, is shown here. These cabinets are all steel with waterproofed insulation of corkboard. The hardware is of extra heavy cast brass and the doors are double sealed with Wirt gaskets. The interior finish of all models is porcelain. Doors to the lower compressor compartment open conveniently on hinges.

The compressor used in this unit is operated by a 1/4 h. p. motor to which it is connected by a V-type rubber belt. The condenser is of the radiator type. The refrigerating effect is 10 pounds of melting ice per hour.

The cast iron cooling unit has its temperature controlled by a thermostat. This control is accomplished through a metal bulb placed on the side of the cooling unit and connected to a metal bellows which operates the thermostat.

Methyl chloride is used as a refrigerant and oil is prevented from leaving the compressor and mixing with the refrigerant by a special arrangement.

Williams Oil-O-Matic dealers are being given the first opportunity for the Ice-O-Matic franchise, but where Ice-O-Matic dealers are not equipped or where other conditions prevent their handling Ice-O-Matic, the franchise will be placed with someone else.



Ice-O-Matic 6 cubic foot model

## PRINCIPLE OF DIRECT COOLING IS USED IN BILT-RITE COOLERS

The 1928 line of Bilt-Rite water coolers manufactured by the Russ Mfg. Co., Cleveland, Ohio, includes a variety of styles covering practically any drinking water application. The Bilt-Rite unit, sold throughout the country by Frigidaire and Kelvinator dealers, is engineered and designed for the single application of water cooling.

The Bilt-Rite cooling unit is based upon

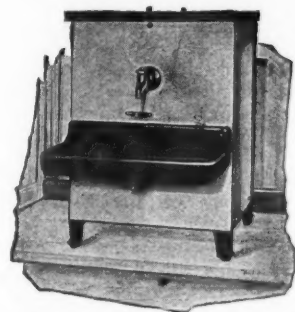
the principle of direct cooling and is comparable in operation to the commonly known instantaneous water heater. The coils containing the water are immersed in the liquid refrigerant. Because of the direct heat transfer between the water to be cooled and the cooling medium the Bilt-Rite construction permits operation at a comparatively high low side temperature which in turn allows the compressor to operate at increased efficiency.

An accurate means of controlling the temperature of the exit water is provided in the form of mercurial control which is easily adjusted and which has a set differential which cannot be adjusted below the temperature corresponding to the freezing point of water.

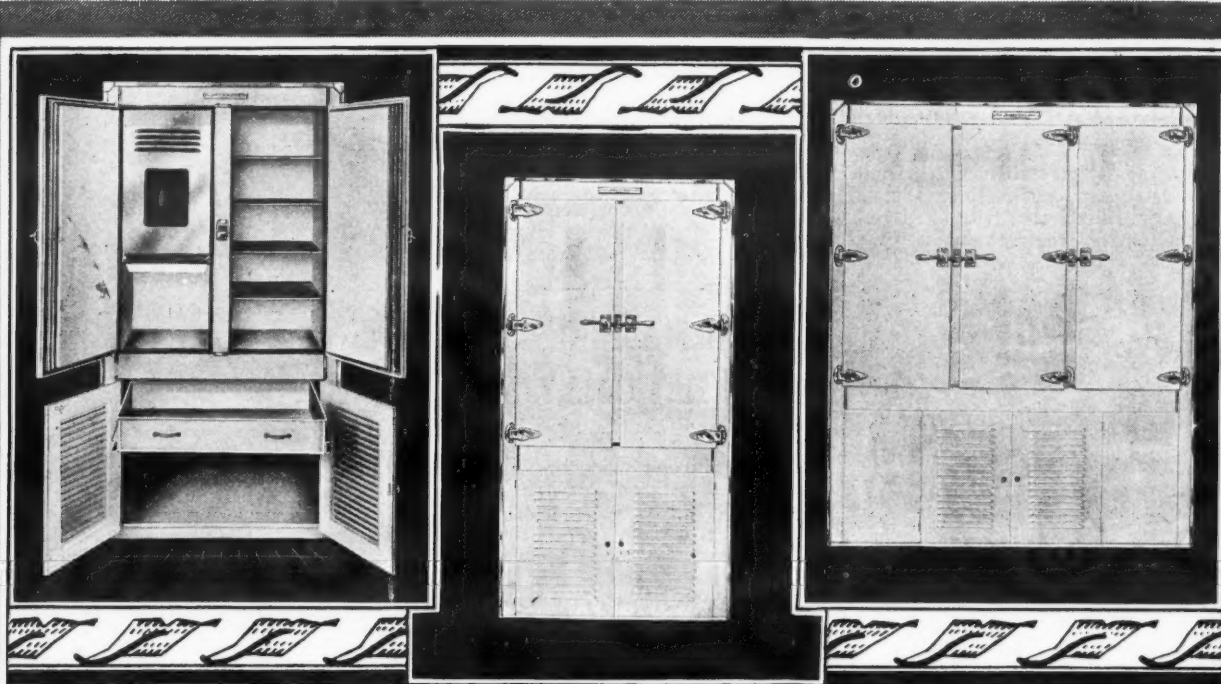
Model 622, in cutaway form, is a type of unit designed for use in offices and other places where a normal amount of water will be required.

Model 672, for counter use in cafeterias, is characteristic of the design of the entire line of Bilt-Rite cabinets.

Model 811 will deliver as high as 50 gallons per hour cooled from 70 degrees to 45 degrees for a circulating water system. The dimensions are only 27 inches wide, 19 inches deep and 36 inches high.



Bilt-Rite model 672 cafeteria cooler



## Jewett Quality and Jewett Experience

... now available in these self contained  
cabinets for electric refrigeration. . . .

Seventy-nine years of knowing how is now available to the electric refrigeration industry in these new cabinets by Jewett. The standard of quality you have always associated with the name Jewett is built into these cabinets at a price that makes them an outstanding value even on a competitive basis.

You will do a good stroke of business for yourself when you write for complete particulars and prices.

THE JEWETT REFRIGERATOR CO.

BUFFALO, N. Y.

# JEWETT REFRIGERATORS



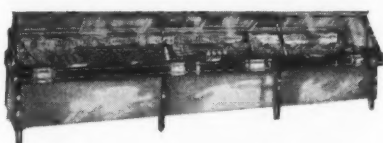


Bilt-Rite Cooler

### GLOECKLER DISPLAY CASE HAS ONLY ONE THICKNESS OF GLASS

A feature of the line of commercial refrigerators manufactured by Bernard Gloeckler Co., 1627-33 Penn Ave., Pittsburgh, Pa., is their new display case of all metal construction and equipped with only a single course of extra heavy plate glass. The horizontal top of this case is of Monel metal. Between the top and coil housing proper is a series of sliding sashes permitting access to the interior of the case.

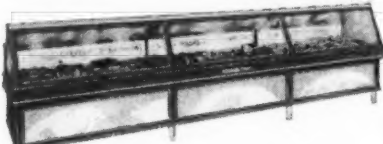
The front of the base is enclosed with



Gloeckler case model 5227

sheets of porcelain enamel on Armco iron. According to the manufacturer, tests have been run on cases using triple glass, double glass and single glass. Color and shape tests of the meat on display have been made to determine the difference in value of cases built with different number of panes. The result has been the production of this case, style 1127. The dimensions of the case are height 48 inches, depth 39 inches, and stock length 6, 8, 10, 12 and 14 feet.

Realizing that many people may prefer

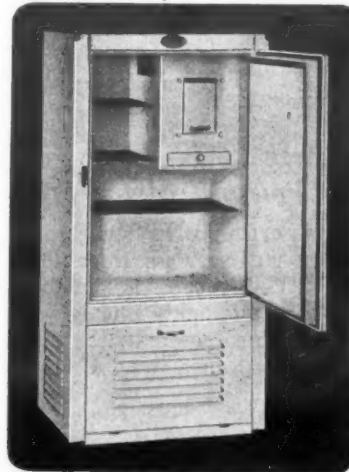


Gloeckler case model 1127

a case with more than a single pane of glass, display case style 5227 is also available. Double plate glass is used in front and on top. In this case the front glass is in a wood frame which is quickly detachable, making it easy to clean between the panes of glass.

### BELDING HALL HAS NEW APARTMENT SIZE UNIT

Model SK-5, the latest development of the Belding-Hall Electric Corporation, Belding, Mich., has a capacity of 4 9/10 cubic feet. The cabinet is finished on the exterior in lacquer and has an interior food compartment of white porcelain. Insulation is of two and three inch corkboard. Cooling unit has three ice cube trays with thirty-six cubes in each tray. The com-



Model SK-5 Electric unit

pressor is operated with a 1/6 horsepower motor. Dimensions of the cabinet are: width 26 1/2, depth 20 3/4, height 52 1/2.

As in all Electric models, sulphur dioxide is used as a refrigerant, the compressor is of the rotary type, air-cooled and controlled as through a mercury thermostat. Others models range in size to 14.6 cubic feet food capacity.

### Federal Gauge Changes Name

The Federal Gauge, 564 West Adams St., Chicago, Ill., announces a change of the name of that company to the Mercoid Corp. This company manufactures the Mercoid controls.

### ABSOPURE ANNOUNCES NEW BABY GRAND 4 CUBIC FOOT UNIT

Believing that there is a need for a low-priced small size electric refrigerator, the Absopure Refrigerator Division of General Necessities Corp. has brought out the Absopure Baby Grand model. This cabinet has a food capacity of 4.3 cubic feet and food storage space of 8.2 square feet. It is finished, interior and exterior, with white lacquer. Insulation is of two-inch corkboard, sealed with Hydrolene.

The freezing unit is a direct expansion coil which automatically defrosts itself. Two ice cube trays are provided with twenty-eight cubes in each tray. An automatic thermostat controls the temperature of the freezing coil.

The compressor is of the reciprocating type, single cylinder, and is operated by a 1/6 horsepower motor. Methyl chloride is used as a refrigerant.

Keeping in step with the trend toward color, Absopure has, in addition to the regular line of white cabinets, a number of colored models. Ice cream cabinets, apartment house equipment and water coolers are also included in the Absopure line.

### HERRICK HAS LINE OF DOMESTIC AND COMMERCIAL CABINETS

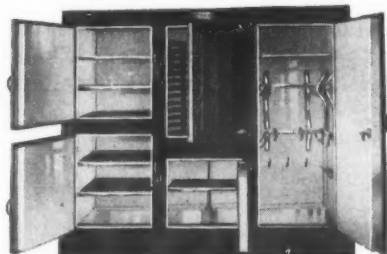
Herrick refrigerators, manufactured by the Herrick Refrigerator & Cold Storage Co., Waterloo, Iowa, are available in a wide range of styles, including several models particularly designed for use with electric refrigeration. The manufacturers stress the importance of first of all purchasing a quality refrigerator so that in the event that the owner decides to change from the use of ice to electric refrigeration, the cabinet will be of a grade which will do its share in helping to maintain the proper temperatures and relieving the load of the electric unit.



Herrick domestic cabinet

Above shows the type of domestic cabinet which is used mainly in remote installation. This cabinet may be had in opal, plate glass, porcelain or white enamel lining. Its shelf area is 9.27 square feet.

If the prospect plans to make his refrigerator contain the entire electric unit the



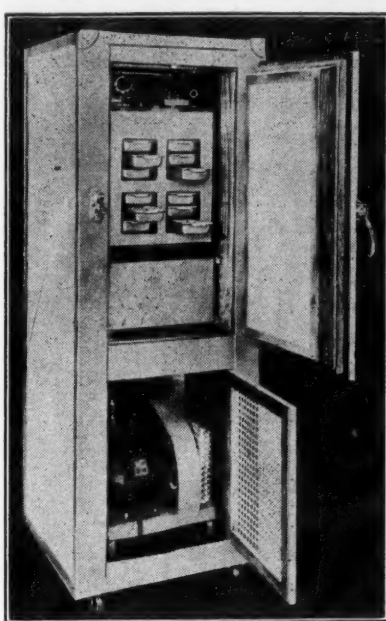
Herrick commercial refrigerator

Herrick self-contained unit cabinets are available, built in one piece. This model is finished in quarter-sawn oak or white enamel and in three different linings. Herrick also makes separate bases so that a refrigerator which is being used with ice may be converted to a self-contained electric refrigerator through the addition of the electric unit and one of these bases. Where specified, Herrick cabinets come equipped with supports and drillings for the installation of electric refrigeration.

### OFFERS NEW LINE OF ICE CREAM SHIPPING JACKETS

Ice cream manufacturers will be interested in the new metal-lined and canvas shipping jackets manufactured by the Montgomery-Washburn Company, Saugerties, New York.

The metal-lined jackets may be had with or without a brine cover, which is hinged and easily removed. The canvas-lined jackets are available in three different styles: the standard, the steel-bound bottom, and the long distance extra insulated jacket.



Universal Towel Cooler

### UNIVERSAL COOLER DEVELOPS MODEL FOR BEAUTY PARLORS

The New York branch of the Universal Cooler Corporation has developed this refrigerator, designed especially for use in beauty parlors and barber shops, where cold towels are used in large quantities.

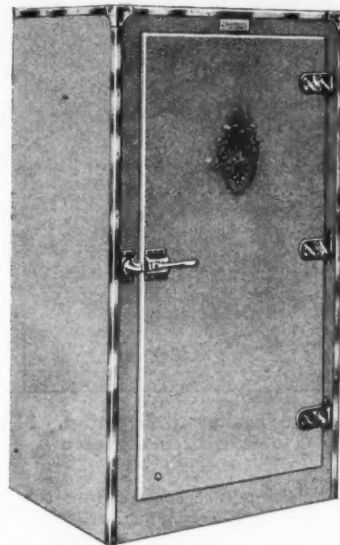
As can be seen in the illustration, the upper part of the cabinet is taken up, for the most part, with the freezing unit, which is designed to supply a large quantity of ice cubes which are used in facial treatments.

Beneath the cooling unit is a tray in which towels are kept cold.

### CRYSTAL REFRIGERATORS ARE EQUIPPED WITH NEW DOOR GASKET

Incorporated into the construction of Crystal refrigerators, manufactured by the Crystal Refrigerator Co., Fremont, Nebr., is a new combination door-gasket and circuit breaker. The device consists of a cork gasket 1/4 inch wide set into a groove around the edges of the door opening. The door flange closes against the gasket, preventing metal to metal contact of the door with the body of the refrigerator. The gasket also acts as a circuit breaker between the inside metal lining and the metal exterior. An insulated metal panel is placed over the steel door making a 1/2 inch off-set flange.

This style of construction is said to prevent condensation on the front of the



Crystal apartment model



Crystal cabinet with vegetable bin

refrigerator and does away with the necessity of exposed wood parts around the edges of the doors and wood jambs that absorb moisture. The apartment house cabinets, shown here, are equipped with this new gasket.

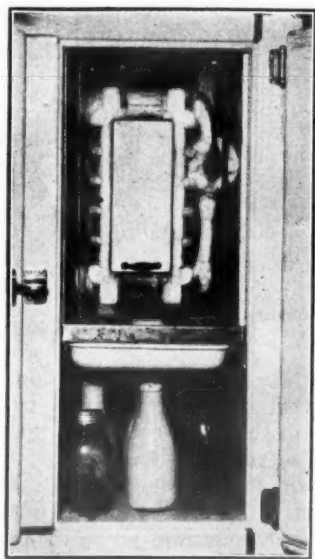
These cabinets are regularly supplied in white lacquer but on special order can be furnished in four standard colors of jade green, ivory, turquoise blue and Chinese red. Transfers of flowers and conventional designs in harmonizing colors are placed on the doors. The interior of all models is of white enamel.

### BENJAMIN CRYSTEEL CABINETS HAVE MANY CONVENIENT FEATURES

Benjamin Crysteel all-porcelain cabinets have been developed with more than just the esthetic taste of the housewife in mind. In addition to being attractive in white porcelain with black porcelain trimming, Benjamin cabinets have these added features: an interior, toggle-switch operated,

## American Refrigerating Products For Multiple Hook-Ups

### American Domestic Refrigerating Units and Float Valves



2-Section Unit with float valve along side

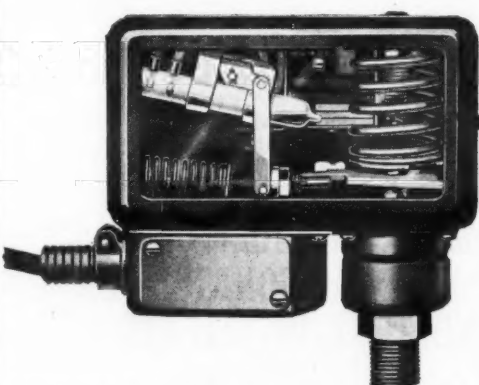
The combination of AMERICAN Domestic Refrigerating Units and AMERICAN Float Valves are in many multiple installations in various parts of the country.

The units are sectional and made in three heights so that you can order them to meet your requirements. They are shipped assembled per your specifications.

AMERICAN Float Valves are made in both the high and the low pressure types. The low pressure, when connected to AMERICAN Domestic Refrigerating Units as shown in illustration, are used on multiple hookups. This combination is also adaptable to commercial installations where one or more boxes and counters are to be refrigerated.

Write for full particulars regarding this combination or information of AMERICAN Automatic Expansion Valves.

### MERCOID CONTROLS



MERCOID Controls are furnished to operate either by temperature or pressure. They are applicable to all makes of machines. MERCOIDS are furnished as standard equipment by many manufacturers and are used by all prominent manufacturers where close control is needed or where special requirements must be met. Adjustable over a wide range of temperature or pressure. Can be set for either close or wide control. For temperatures as low as minus 30 degrees Fahr. and for pressures from complete vacuum up. No exposed arc. No corrosion of contacts. Strong, rugged, reliable. Time tested from years of service on large commercial work.

Dealers can increase sales and profits by selling units for industrial or laboratory service where close regulation is needed, such as, germination of seed and bacteria, dessert trays, fur storage, cooling film developer, etc. MERCOID makes these installations possible.

### MULTIPLE HOOK-UPS

A new model is now available for pressure control on multiple hook-ups. The MERCOID Dual Control performs two functions. It controls the operation of the unit according to pressure on the low side but has a high pressure cutout which stops the unit when the high pressure limit is reached. Two controls in one. Wide adjustability.

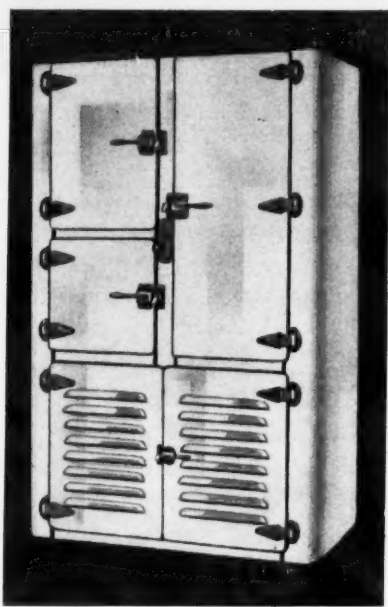
Write for full literature describing MERCOID Controls for refrigeration.

## AMERICAN RADIATOR COMPANY

Accessories Division Dept. U  
40 W. 40th Street  
New York, N. Y.

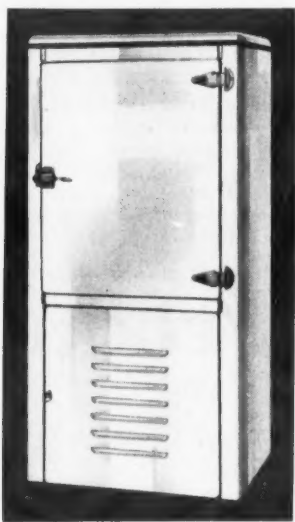
Industrial Division No. 104  
816 So. Michigan Ave.  
Chicago, Illinois





Large Benjamin domestic model

dome light to illuminate the food compartment and inspire cleanliness; heavy type easy-moving casters which permit cabinet to be conveniently shifted about to facilitate cleaning in the kitchen; heavy woven tinned wire shelves; generous size food compartments at a height from the floor that eliminates stooping, and an interior food compartment floor raised slightly



Benjamin apartment model

higher than the door sill, allowing easy and thorough cleaning.

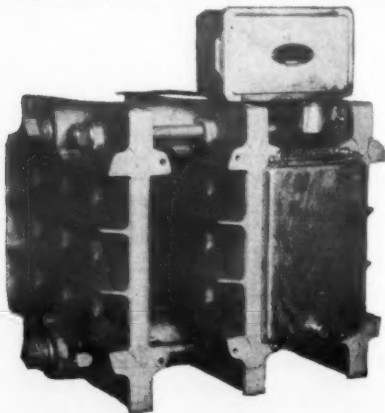
As to the details of construction used in Benjamin cabinets, the interior is seamless porcelain, used on Armco iron, with an exterior of the same type, made as near seamless as possible. Sheet corkboard insulation is used and is sealed with Hydrolene cement.

Where a remote installation of the compressor is desired, a porcelain enameled lining can be supplied for the machine compartment underneath the food compartment, converting this into an extra vegetable storage bin.

### AMERICAN RADIATOR HAS NEW DUAL CONTROL FOR MULTIPLE INSTALLATIONS

American domestic refrigerating units have been on the market for some time and used in most every form of refrigeration, from the small self-contained machine to the large remote installation or semi-commercial box. They have also been used where large quantities of cubes are required as their design is such that cubes are frozen very quickly.

In addition to domestic refrigerating units, the American Radiator Company, Industrial Division, 816 S. Michigan Ave., Chicago, Ill., manufacture American float



American Radiator 3-section, 11-inch unit with Mercoind control

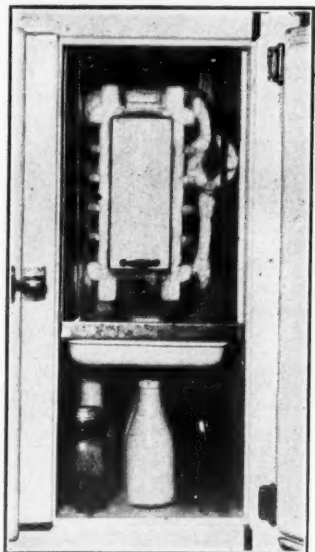
valves and automatic expansion valves. The float valves are produced—both the low and high pressure, each, of course, having their respective applications. The low pressure type is necessary in multiple installations and is being used extensively in this type of system.

All American domestic refrigerating units are tested and assembled under 300 pounds air while submerged in water. The float valves and expansion valves are both tested under 125 pounds air while submerged.

#### New Mercoind Dual Control

The new Mercoind dual control has two

functions. It controls the compressor according to pressure on the low side and also has a high pressure cutout. This is accomplished by using two bellows-operated pressure elements actuating one Mercoind switch. One bellows makes and breaks the circuit according to pressure changes on the low side, and can be quickly adjusted for the desired make and break pressures, either above atmosphere or in vacuum. The other bellows is connected to the high side and is set so that in case the pressure should reach the high limit the circuit will be broken. This dual control, therefore, takes the place of two separate controls.

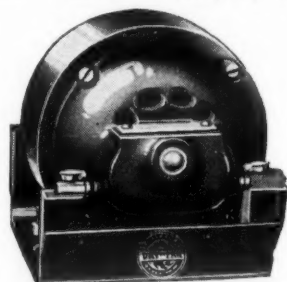


American Radiator 2-section, 11-inch unit with float valve

The manufacturers also state that their regular line of Mercoind controls—standard equipment on many machines—are specially adapted to installations where close temperature control is required. There are many applications for small refrigerating units for industrial and laboratory uses, such as cooling of seed or bacteria germination boxes, cooling of X-ray apparatus and film developer, dessert trays and fur storage rooms. These furnish opportunities for dealers to expand their sales beyond the normal household field, provided close temperature control is available.

### DAY-FAN HAS NEW MOTOR FOR ELECTRIC REFRIGERATION UNIT

In building a motor for electric refrigeration, the Day-Fan Electric Co., Dayton, Ohio, has for the past several years been doing much experimental work and has now developed and tested out successfully a new motor, which is announced to the electric refrigeration industry. This motor is now in use on a number of different machines. This is a motor, say the Day-

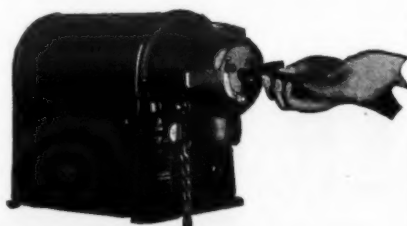


New Day-Fan Motor

Fan people, that is satisfactory to the central stations in the matter of high power factor and efficiency. It is also claimed satisfactory as to economical cost of operation, as well as being quiet and dependable. Of further importance to the electric refrigeration manufacturer is its low initial cost.

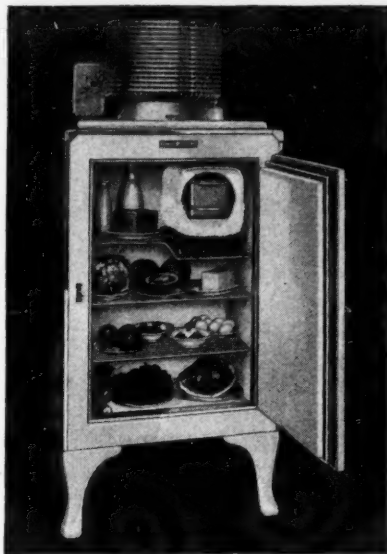
### DEVICE CLEANS ENDS OF INSULATED WIRE

The new improved France electric motor driven insulated wire stripper, made by the France Manufacturing Co., 10321 Berea Road, Cleveland, Ohio, is a motor driven machine for cleaning the ends of insulated wire on a high production basis. This device is strictly a production machine tool which eliminates the hand methods of cleaning the ends of insulated wire.

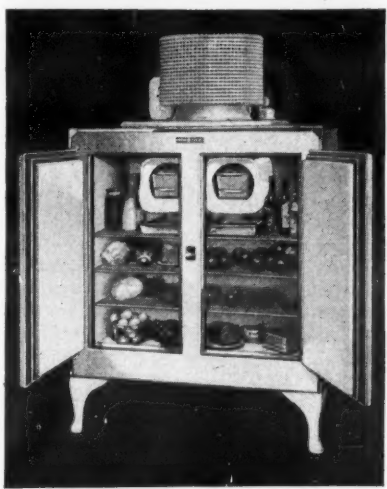


France Wire Stripper

The machine is driven by a 1/8 h. p. electric motor. Cutting knives rotate continuously within the case. An ordinary lamp socket supplies the current.

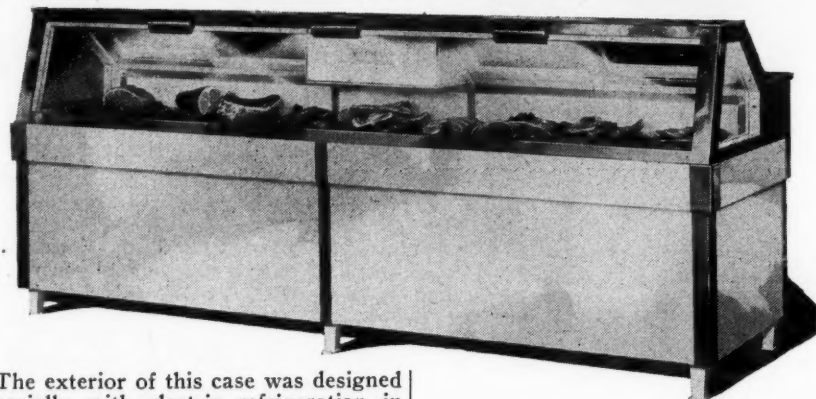


General Electric model P-52



General Electric model PL-95 and RL-95

### New McCray Display Case



The exterior of this case was designed especially with electric refrigeration in mind, the porcelain being fused on steel with Monel metal trim. Two courses of plate glass are used throughout the case, and in the 10 foot length there is no stile in the center.

The interior of the case is enamel on Armco iron and is positively water tight so that if desired, water could be

turned into the interior for cleaning. The insulation is of pure cork board sealed with hydrolene cement, a process which makes a perfectly air tight insulation. Electric illumination is regular equipment on this new case which has been designated as the 104 Display-All.

### Selection and Treatment of Material Important Factors in Quality of Refrigerator Gaskets

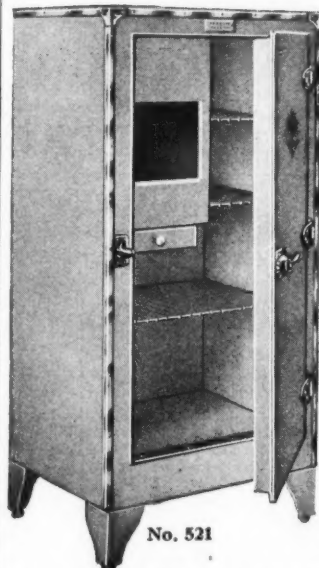
The compactness and apparent simplicity of the modern electric refrigerator gives little hint of the tremendous amount of research and experimentation which has been necessary to obtain satisfactory results in all of the details of design and construction. The rigorous requirements of electric refrigeration, as compared with the demands upon the ordinary ice box, have focused attention upon cabinet design, particularly during the past year.

An important item entering into the construction of the cabinet is the gasket which seals the door opening against loss of refrigeration. A little booklet on "Rubberized Fabrics" recently issued by the E. J. Wirf's Organization, Inc., 17th and Walnut

St., St. Louis, Mo., discusses the various processes which are used in preparing and curing gasket fabrics. The calendar and spreader processes are described, also the acid and steam cures.

Wirf's Air-Tite gasket for household refrigerators are made of 5.35 sheeting. Heavier gaskets for commercial refrigerators are made 2.75 drill. Gaskets are required primarily to withstand flexing and compressing. These fabrics are said to offer a maximum of life against this usage. For first grade refrigerator gaskets, only calendared, stove-cured rubber coatings are used. Cheaper gaskets are generally made of spreader coated, acid-cured fabrics.

## Recommended for Remote Installations and Multiple Hook-Ups in Apartments

No. 521  
22 3/4 inches wide, 17 1/4 inches deep, 45 inches high; Total capacity 5.2 cu. ft. Can be furnished without legs.

Here are refrigerators you can install in apartment buildings and hotels with the assurance of perfect service and satisfaction. Built by a plant with 18 years' experience manufacturing steel refrigerators exclusively, Crystal Cabinets are a worthy companion to any mechanical refrigerating unit. Try them on your next apartment house installation. A trial will convince you of their many superior advantages.

#### Gasket and Circuit Breaker on Doors

The Crystal patented cork door gasket is set into a groove around the edges of the door opening. The door flange closes against the gasket preventing metal to metal contact of the door with the body of the refrigerator. The gasket also acts as a circuit breaker between the inside metal lining and the metal exterior. An insulated metal panel is placed over the steel door, making a 1/2-inch offset flange. This improved style of construction prevents condensation on the front of the refrigerator. There are no exposed wood parts around the edges of the doors and no wood jambs to absorb moisture. The cork gasket is held in place by friction. It will last indefinitely and can easily be replaced if necessary as there are no nails, staples or screws to remove.

#### Automatic Latches

All doors of Crystal Apartment Refrigerators are equipped with hori-

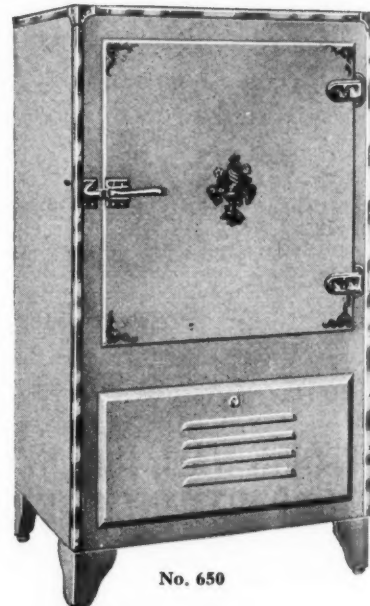
zontal roller spring latches made from brass and nickel plated. Crystal Cabinets are high grade in every respect and have many exclusive constructional advantages and features you should know about. Write for our Circular No. 93 stating name of unit you are handling.

#### For Colorful Kitchens

Crystal Cabinets are regularly supplied in white lacquer. On special order they can be furnished in the four standard colors of jade green, deep ivory, turquoise blue and Chinese red to match gas stoves, kitchen cabinets and other kitchen furnishings. Appropriate colored transfers of flowers and conventional designs are placed on the doors. The interiors of colored refrigerators are white enamel.

#### Lacquer Finish . . . Polished Metal Trim

Crystal Apartment Refrigerators are finished on the outside in durable white lacquer. The inside is finished in baked white enamel. The edges and corners are protected with polished aluminum moldings and corner plates.

No. 650  
26 3/4 inches wide, 21 1/4 inches deep, 49 inches high; Total capacity 6.5 cu. ft. Can be furnished without legs.No. 652  
26 3/4 inches wide, 21 1/4 inches deep, 32 inches high; Total capacity 6.5 cu. ft.

Crystal Refrigerator Company, Fremont, Nebr.

**Crystal**  
TRADE MARK

## APARTMENT REFRIGERATORS

#### Special Sizes

Crystal Refrigerators can be supplied in any special size to meet apartment house requirements. Send sketches or blueprints giving quantities desired and quotations will be submitted without charge or obligation.

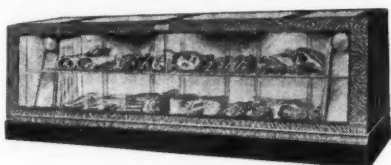


## FULL VISION CASE FOR ELECTRIC UNIT FEATURED BY LIGONIER

The Ligonier Refrigerator Company, Ligonier, Ind., introduces their full-vision display counter, designed for use with electric refrigeration only. Coil spaces are provided at each end of the case. The front has three thicknesses of plate glass, with two dead air spaces sealed tight by a special process. Vertical baffles bring about a circulation of cold air. The interior finish is white enamel, and the exterior in oak.

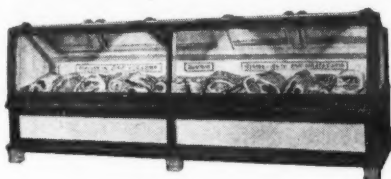
This counter is equipped with a built-in indirect electric light system, completely illuminating the counter, but with all wire and reflectors concealed.

Eight, ten and twelve foot lengths of this full-vision case are carried in stock. Cases up to ten feet in length do not have a dividing strip in the center of the front glass.



Ligonier full-vision case

The Ligonier service refrigerator counter is designed for use with either ice or electric refrigeration. As can be seen from the accompanying cut of this model, it differs slightly in arrangement from the full-vision counter described above.



Ligonier service counter

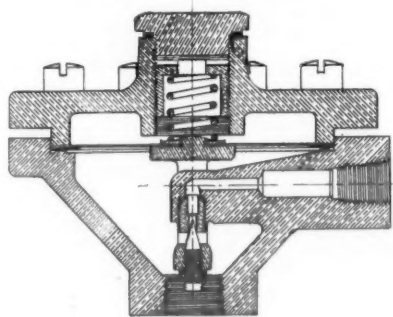
The Ligonier freezer counter may also be operated with either ice or electric refrigeration, and is designed to maintain a temperature from thirty-four to thirty-eight degrees, but a freezing temperature may be obtained if desired. The cabinet work is of white oak. The front has three thicknesses of plate glass.

Each of these cases is heavily insulated. Doors are of the over-lapping type, fitted with rubber gaskets. Heavy brass, nickel-plated hardware is used throughout.

## EXPANSION VALVE BY HEIDEMAN SAID TO BE EXTRA SENSITIVE

Below is sectional view of the liquid control, or expansion valve, recently developed, and now in the course of manufacture on a production basis by F. J. Heideman, formerly chief engineer of the Whitehead Refrigeration Co., Detroit.

This valve is said to operate equally well



Heideman expansion valve

under either a vacuum or pressure, and is adjustable to the requirements of all the known refrigerants used for domestic purposes. It can be adjusted to operate satisfactorily from 29 inches vacuum to 30 pounds pressure. It is so sensitive, according to the maker, that it has shown, by

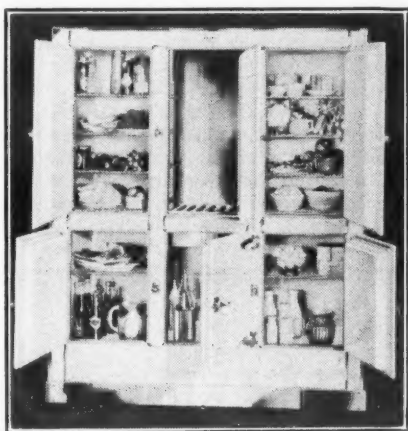
test, to maintain an almost constant pressure.

The fact that the needle valve closes against liquid pressure insures a clean valve at all times, due to the liquid rushing through with a scouring effect. The point of the needle projecting in an upward direction in the orifice dislodges any scale or other foreign substance causing restriction.

The valve is self-aligning, due to the fact that the needle is so arranged that it does not leave the orifice at any time and guides itself to a perfect seat with no friction loss. The valve and jet both being constructed of Nitralloy, which is very hard and non-corrosive, permits the jet to have a knife edge seat. Foreign substances that may lodge between the valve and jet, and too large for passage, are sheared in two on the closing of the valve, thus reducing their size and eliminating them entirely.

## NEW SEEGER CABINETS DESIGNED FOR EITHER ICE OR ELECTRIC UNIT

The Seeger Refrigerator Co., St. Paul, Minn., has recently designed and brought out a new line of all porcelain cabinets designed for use with either ice or electric refrigeration, although they are primarily built for ice. In designing these cabinets the Seeger Company has had in mind the family that is at present not in a position to finance a complete electric



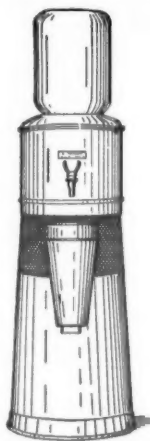
Large domestic model Seeger

refrigerator but which will likely be in a position to purchase the electric unit later on.

These cabinets are equipped with a porcelain drip pan that is made a part of the interior lining, with a drain and an ice rack. They are also equipped with a vegetable storage bin. Provision is made for the hanging of the electric freezing unit. An opening in the back of the cabinet is provided and plugged so that it will not be necessary to drill the porcelain when the change from ice to electric refrigeration is made.

The compartment which, with ice refrigeration, served as a vegetable bin, can be used to contain the compressor of the electric unit or the compressor may be placed in the basement for a remote installation.

Subscribe to ELECTRIC REFRIGERATION NEWS. See coupon last page.



BOTTLE TYPE

## KoldStream

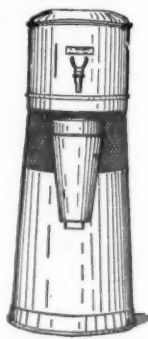
### ICELESS COOLER

KoldStream success is the result of a number of years' effort along one line to one end—namely, cooling water.

Dealer inquiries solicited.

The Cleveland Iceless Cooler Co.

971 E. 63RD ST.—CLEVELAND



PRESSURE TYPE

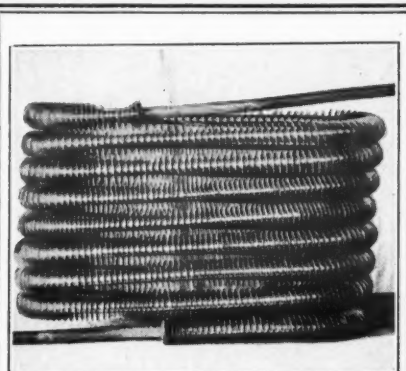


New Seeger with vegetable bin

## Zerozone Wisconsin Co. Moves Into New Store

The Zerozone Wisconsin Co., formerly located at 995 Third St., Milwaukee, Wis., has recently moved into new quarters in the Schroeder Hotel Bldg., at Fifth St. and Wisconsin Ave. The company is distributor for the Iron Mountain Co. in the state of Wisconsin. C. W. Kraemer, president of the company, is actively interested in local affairs, and is secretary-treasurer of the new Refrigeration Dealers Association of Milwaukee. Mr. Kraemer reports a successful year for the company and expresses confidence that there will be a nice increase in sales during 1928. He is a firm believer in newspaper and direct mail advertising, and places a high value on exhibitions at fairs and food shows.

The company employs approximately 12 salesmen, who devote special attention to apartment business. A complete installation and service department is maintained.

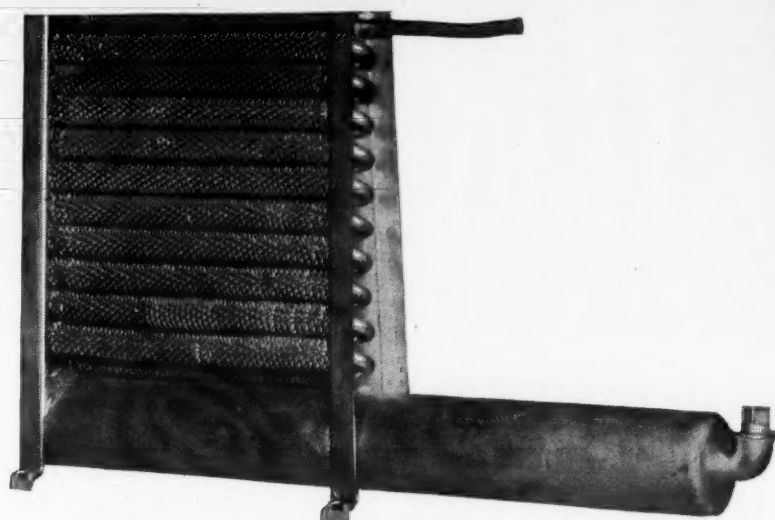


## ROME CONDENSERS

are formed in any shape of one piece of seamless copper tubing, fitted with heavy gauge copper radiating fin. Rome condensers are five times as efficient as plain tubes

Rome-Turney Radiator Company  
ROME, N. Y.

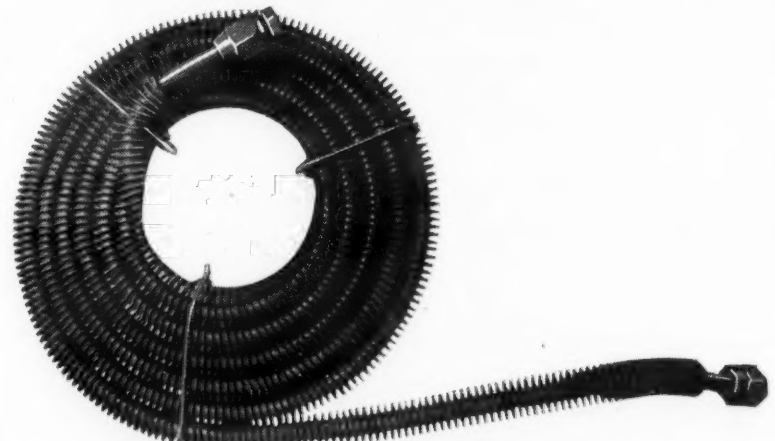
# McCord Built CONDENSERS



Household Type Unit with Seamless Tube Receiver Attached



Commercial Type for 1 1/2 H.P. Unit—7/16" Tubing



7/16" Tubing—Beehive Type

McCord Condensers are designed and built to the particular requirements of your refrigerator. McCord built condensers are compact, efficient and attractive in appearance.

McCord Condensers, whenever practical, are made from continuous tubing with a minimum of joints, reducing the hazards of leaks. Only seamless, bright, annealed tubing is used. Condensers are delivered, washed, tested and dehydrated with ends plugged.

McCord receivers are made from seamless, copper tubing, the ends being spun closed—eliminating welded joints and avoiding possibility of scale. All fittings are brass drop forgings.

McCord extends the services of their engineers and laboratory in developing more efficient and attractive condensers for your refrigerators.

# M<sup>c</sup> Cord

## RADIATOR & Mfg. Co.

DETROIT, MICH.

Condensers - Receivers - Evaporators  
Radiators - Gaskets

## Why Experiment?

We are in quantity production and can supply your needs promptly.

1 5/8" x 1 5/8" Double Cylinder Compressors for SO<sub>2</sub> or Methyl Chloride.

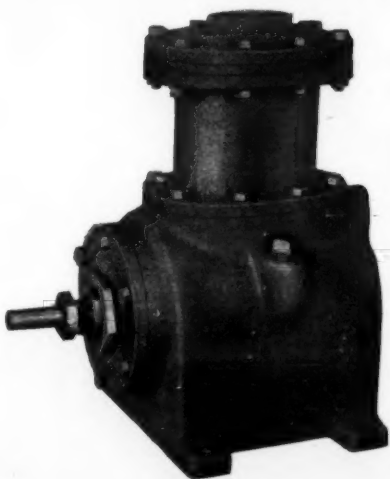
Also complete condensing units.

Illustrated circular and prices on request.

## KULAIR CORPORATION

4 South 15th Street

Philadelphia, Penna.





## Basket Ball Girls Advertise General Electric



## COMPARES PROBLEMS OF AUTOMOTIVE AND ELECTRIC REFRIGERATION FIELDS

(Concluded from Page 3, Column 3)

ment in the mechanical refrigeration industry over conditions in 1926 and 1927, but there remain many fundamentals to be righted, with stabilization of policies and co-operation to be effected.

There is no more reason for guaranteeing free service beyond the initial adjustment period in the mechanical refrigerator than there is in the automobile.

The American public is proverbially careless about the way they take care of machinery. The farmer will spend several thousands of dollars in farm machinery, only to let it stand out in the pasture and rust itself to pieces, when he is not using it.

The same thing that is true of the farmer is true of the city housewife with her household appliances, as history shows that washing machines, vacuum cleaners, and electric refrigerators receive practically no attention from the owner.

### Care which Owner Gives Automobile Due to Pride of Ownership

It is only in the case of the automobile that the *pride of ownership* seems to prevail, to the extent that the owner actually houses and services his machine properly. Even the farmer who allows his harvesting equipment to go to rack and ruin by undue exposure to the elements, will run his Ford car under a shed to protect it, and almost all automobile owners have been educated to keep their motors oiled and their chassis greased, to assure the smooth running and long life of their cars.

In the matter of electric refrigerators in homes, however, no care is given same by the owner, and in consequence many calls for service are made which would not be necessary if a normal amount of care was exercised by the owner.

The man who will spend \$3,000.00 for an automobile in the spring and will turn it back in the fall or winter, in exchange on a new car of a later model—thus sacrificing 50 per cent of his initial investment, will buy an electric refrigerator for around 10 per cent of what he usually pays for his automobile, run it over one year *without any attention*, and then complain because the manufacturer whose service station he calls upon to render service to his refrigerator sends him a bill for \$5.00 or \$6.00.

This is the *bane* of the domestic refrigeration business and somehow, in some way, the public must be brought to a realization that what is true of the automobile is equally true of the mechanical refrigerator, and what is gladly accepted as *fair* in the rendition of automobile service and charges is equally fair in the electric refrigerator practice.

The only difference between a mechanical refrigerator and an automobile as regards service is that the owner takes the automobile to the service station to be gone over, whereas the service station has to be taken to the mechanical refrigerator in order to render any needed service. Aside from this feature, the service problem in either case is identical.

### Cost of Development Has Been Paid Out of Pockets of Stockholders

Thus far in the automobile business the actual cost of the development of the art and the progress of the industry has been paid for by the public. In the mechanical refrigerator field—to date, the actual cost of development has been borne by and paid for out of the pockets of the stockholders of the several large manufacturers.

Obviously it is unsound to expect that the development of an industry which has the ultimate potentiality of mechanical refrigeration, and in which so many millions of dollars are invested, should be supported and carried by stockholders instead of by the public, for after all the ultimate benefit of the development of the mechanical refrigeration art redounds to the public.

Summing up the general situation—it is apparent that whereas the automobile industry has persuaded the public to co-operate and to pay the bills—the mechanical refrigeration industry has permitted the same public to "backfire" and shift to the stockholders' shoulders the cost of the benefits which the public has been deriving.

Naturally the public utility companies are interested in any device which uses their electricity or gas, and which adds consumers to their lines, and therefore public utility interests very early realized the possibilities of mechanical refrigeration and have taken quite an active part in both the development and distribution of refrigerating products.

The coming of public utility interests into the refrigeration field, allied with certain of the larger manufacturers, has had a very stabilizing effect on the industry as a whole and has done a great deal to bring about a better understanding with the public, besides certain engineering revision in the product itself, and in some cases has helped to relieve the manufacturers' service problem.

One of the things we hear the most complaints about from owners of mechanical refrigeration in their homes is that of *noise*. One of the peculiarities about any piece of equipment, which incorporates moving parts, is that ultimately these parts will wear and become noisy, and the longer such parts are operated without adequate lubrication the faster the wear takes place and the quicker the noise develops. Sometimes even with adequate lubrication, wear and noise cannot be stopped.

### Capitalizing a Weakness

I remember back something over twenty years ago, when the automobile was an infant and the various automobile manufacturers were vying with each other to improve the efficiency of the chassis and cheapen its cost.

At that time I was connected with the old Maxwell-Briscoe Motor Company—now the Chrysler Motor Company—and we were trying with a varying degree of success to build a differential ball-bearing for our rear axles, which would adequately handle both radial and thrust load.

As engineers you can appreciate our problem. There were no rules to determine the largest practical size of a ball to be used, or the proper radius to adopt for the cup and cone, or the proper degree of hardness required for satisfactory service.

We finally adopted a 3/4-inch ball, and after much experimentation designed the cup and cone to suit, but in spite of all we could do, wear took place as the axles were run under cars, and a noise developed like the "yowl" of an operatically inclined alley cat, which steadily increased in volume and was used by our competitors as concrete evidence of why prospects should not buy Maxwell cars.

We had in our experimental department a very expensive imported car under test, and as the test progressed the rear axle started to become noisy and finally "yowled" as lustily as its domestic Maxwell associate.

Alfred Reeves, for many years past the general manager of N. A. C. Co., was then general sales manager of the Maxwell, and one of his assistants decided that the noise in the axle under the expensive French car was a "French hum" and as the Maxwell axle had the same noise, it also had the "French hum," so forthwith a bulletin was broadcast over the country calling attention to the fact that the Maxwell car was the only automobile built in the United States which incorporated the "French hum," and Americans were fortunate indeed to be able to obtain this best foreign practice at low domestic prices.

Before anyone could gainsay this statement the public started buying Maxwells, and by the time competition commenced to cry "bunk" and to get themselves heard over the country, the company was oversold and the Maxwell owners had become so used to the "French hum" in their rear axles that it bothered them not at all.

Thus a *weakness* was capitalized by sales strategy and what was then a mammoth output of 19,000 cars was sold and delivered in one year, and without anyone being harmed, because the old Maxwell was a sturdy car and the customer received the full value of his dollar.

The moral of this story is that our sales departments might do better to point out in advance that with motor driven compressor units there will always be some noise, and the amount will depend in measure upon the care exercised by the owner.

This would remove the sting from the knock of competition and would sell the public on what to expect as it did the man, who, having married a slender, beautiful girl, found her developing into over 200 pounds of avoirdupois on the hoof, a nasty,

nagging disposition and proclivities towards what is now known as a back-seat driver.

Having read advertisements in the *Saturday Evening Post*, telling about the wonderful claims for anti-knock gasoline, and being this particular day worn ragged by his wife's goading from the back seat, he drove up to a gas station and inquired of the attendant:

"Have you some of that gasoline that stops knocking?"

"Yes," replied the attendant.

"Then give my wife a glass, please," said the man.

### Odors May Be Expected if Food Is Not Properly Handled

Another thing which has caused a lot of trouble in domestic refrigeration during the past two years has been the matter of odors, and although at times this complaint has been a serious one from the manufacturers' viewpoint, yet, after all, there is a comical side to it.

If a man were to go out and eat garlic and limberger cheese, upon his return to his domicile he would be quickly relegated to some back room with an open window, because he would be too "smelly" to occupy the living room with the rest of the family.

On the other hand, the ordinary housewife will put limberger cheese and onions and milk and butter uncovered all in the same refrigerator and expect no odor will result, and that neither the milk nor the butter will become tainted. This matter of odors reminds me of the story of a census taker, who was taking census among the negroes in Georgia.

This man approached a cabin in the door of which sat a young colored woman, who attempted to answer his questions while she trotted a baby on her knee, but between the baby's bawling and the young woman's efforts to quiet it, little progress could be made. Finally the census taker laughed and said: "The little chap is spoiled, isn't he?"

"No, sah; oh, no sah," said the young woman earnestly; "him not spoiled. Dat's de way all little culled chillun smell."

Coming to the matter of education—the

automobile industry has gone ahead only as fast as the engineers were able to improve the efficiency and cheapen the cost of production, and good roads could be built upon which the automobile could travel.

### Vast Amount of Public Education Paved Way for Automobile

The development of good roads in the United States required a vast amount of education and the spread of propaganda, which, initiated by the National Automobile Chamber of Commerce, was successfully carried through the legislatures of the various states in the Union and into the national Congress.

It was some feat to make the farmer understand that it was in his individual interest to change the roads of the United States from gravel to cement—particularly when the farmer was in the habit of working out his taxes by hauling gravel from some nearby gravel pit and dumping it on the roads in his immediate vicinity, where as with the improved cement road it was necessary for him to pay his subsequent and higher taxes in cash.

However, this great educational campaign of good roads was put across, and the result is that today we have the finest system of roads in the world, and some 23 million or more automobiles and trucks operate upon them.

In the mechanical refrigeration field the matter of educating the buying public is just as essentially necessary as it was in the automobile business, but in the case of refrigeration no intelligent campaign of education has as yet been formulated.

Out of over 120 millions of people in the United States there are presumed to be 27½ million families, and a country-wide survey about two years ago showed that only about 35 per cent of these families used any sort of refrigerant.

In other words, only a small portion of the homes in the United States are conscious of the need and value of refrigeration, either in the shape of the old ice box or in the more highly developed state of the present mechanical refrigerator.

### Public Must Be Educated to Need for Better Refrigeration

Thus it is readily seen that while the field for domestic refrigeration is eventually an enormous one, even though only a reasonable percentage of increase is made yearly, yet the refrigeration industry can only be broadened as fast as the public at large can be educated to use a refrigerant, of one sort or another.

The ice manufacturers have combined in community advertising, to get people to use ice, and this will ultimately redound distinctly to the advantage of the manufacturers of mechanical refrigerators, for the same reason that in the old days in the automobile business we used to say and know that the sale of a Ford model to a farmer would ultimately educate the farmer to buy something better, and, of course, mechanical refrigeration for domestic use is vastly superior to ice.

The big job ahead for the mechanical refrigeration industry is to first make the American public "refrigeration conscious," by instructing them that the general adoption of mechanical refrigeration makes for *health and economy* and that the *service* which a refrigerant renders is as indispensable and as necessary as either gas, electricity or water.

I am an optimist as to the future of mechanical refrigeration, and particularly domestic refrigeration. Not, however, the kind of an optimist who many years ago Bourke Cockran referred to in an impassioned speech, when, in explaining the difference between an optimist and a pessimist, said, "An optimist is a person who sees, away off, in the far distance, low down on the horizon, a faint light—which *doesn't exist*—and a pessimist is a person who tries to put it out."

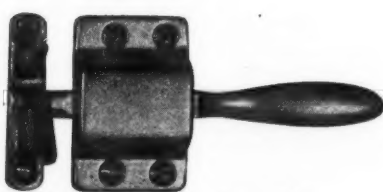
The light *does* exist for the future of mechanical refrigeration, but the nearness, the thoroughness and the volume of this industry's ultimate accomplishment depends in final analysis upon the policy, ability, honesty, sincerity of purpose and co-operativeness of the members of the refrigeration fraternity.

# Refrigerator Hardware

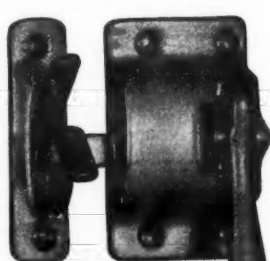
Locks and Latches, over two hundred sizes, in the latest improved types of automatic, non-automatic, reversible automatic, with and without rollers, also springless, underthrow, or better still, the overthrow which does not pry down on door.

Hinges to match in over two hundred sizes and types. Both locks and hinges are made of solid cast brass, bronze, special tempered sheet brass, and other practical metals. Also corners, drip traps, knobs, handles, screw machine products, etc.

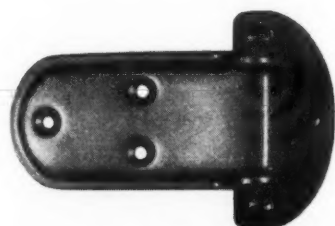
Finishes: bright nickel, dull nickel, bronze any color, brushed silver, genuine chromium plate, or any special finishes required.



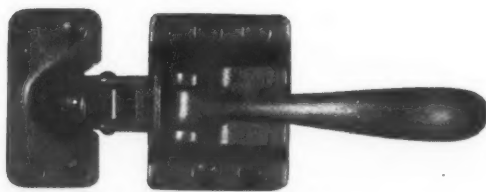
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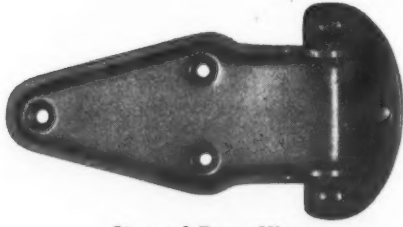
Automatic Lock Made in 5 Sizes



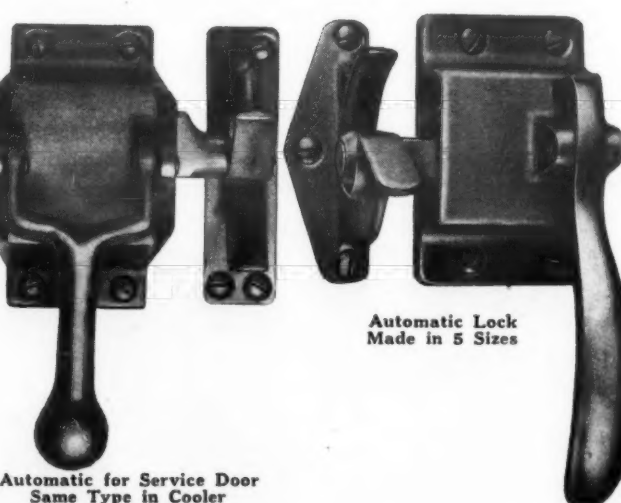
Stamped Brass Hinge Made in 2 Sizes



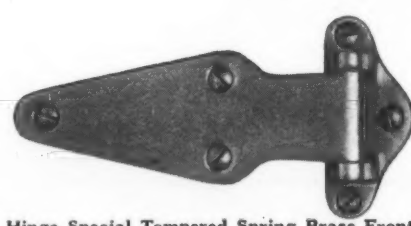
Reversible. Made in 7 Sizes



Stamped Brass Hinge Made in 4 Sizes



Automatic for Service Door Same Type in Cooler Entrance Door Size



Hinge Special Tempered Spring Brass Front Made in 2 Sizes



Hinge Special Tempered Spring Brass Front Made in 3 Sizes

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Grand Rapids, Michigan



# Silica Gel, the New Adsorber What It Is and How It Works

By Glenn Muffly, Chief Engineer, Copeland Products, Inc.

All refrigerating machines and processes in common use today are designed to make use of the fact that heat is required to change a liquid into a gas. The gas may be no warmer than the liquid from which it evaporated, but it has more heat units in it. These latent heat units that do not raise the temperature of the gas are called "latent heat of vaporization." The only real differences between various types of refrigerating machines are in the kinds of liquids or gases used and in the methods employed to change the gas back into a liquid after it has picked up its load of latent heat.

The most popular type of refrigerating machine consists of a compressor driven by an electric motor and a condenser connected to the discharge side of the compressor. This type of machine literally squeezes the latent heat out of the gas and puts it back into liquid form so that it can be used over again, picking up another load of heat units by evaporating inside of the refrigerator.

The absorption type of refrigerating machine differs from the compression type in the method used to put the gas back into liquid form. Heat units are picked up by evaporation of a liquid inside of the refrigerator, just the same as in the case of the motor driven compression machine. Exactly the same evaporator (brine tank, cooling coil, boiler or low side as you may choose to call it) is used inside of the refrigerator, but outside of the refrigerator is a different apparatus for changing the gas back into a liquid.

Most absorption machines use ammonia as the refrigerant, because ammonia is readily absorbed in water. The ammonia gas is pulled out of the evaporator by its affinity for water instead of by the suction stroke of a compressor. After the water has been loaded with ammonia to the point where its rate of absorption slows down the ammonia is driven off by means of heat. Check valves are arranged in the connecting pipes so that the ammonia vapor cannot go back into the evaporator, but it can pass into the condenser.

The fire (usually a gas fire) under the absorber supplies the energy which forces the gas into the condenser, just as the electric motor that drives a compressor supplies the energy which forces the gas into the condenser of the compression machine. The pressure thus produced squeezes the gas into the condenser until the condenser pressure reaches the point at which the gas must condense into a liquid. When the gas condenses to a liquid it gives up its latent heat of vaporization and this heat is radiated to the air or carried away by water. This is the same on both types of machines. In one case the gas is forced into the condenser by a compressor while in the other it is forced into the condenser by the fire under the absorber.

We can think of an absorption machine as another kind of compressor, capable of taking one very big suction stroke (absorbing the gas) and then one very big compression stroke (driving the gas out of the absorber into the condenser). All of the rest of the system is the same. The same parts and the same refrigerant are often used in both types of systems.

This preliminary comparison between compression and absorption machines may bore the engineers among those who have read thus far, but it will help the layman to understand how Silica Gel is used to produce refrigeration.

Silica gel (pronounced "jell") is a solid in granular form. Chemically it is silica ( $\text{SiO}_2$ ), but it differs from ordinary silica in its molecular arrangement. If it were very highly magnified it would appear like a pile of marbles. The action of silica gel depends upon the openings between these very minute globules.

This action is capillary, not chemical. If we had a capillary tube as fine as these tiny pores it would draw water to a height of three and one-half miles. Dry silica gel will take up any vapor and hold it by this capillary attraction. The vapor does not combine chemically with the gel; it is held by capillary attraction, a physical force. It can be compared to the manner in which a sponge takes up water, but the pores of silica gel are so much smaller than the pores of a sponge that the action is incomparably greater.

Silica gel gives up the vapors held in its pores when heated. After it has been "activated" by means of heat and the air pumped out of the container it is ready to take up any vapor by this capillary action, which is called adsorption (not absorption). Adsorption is a physical process quite different from absorption. There is no chemical change in the gel when it adsorbs water vapor or the vapor of the refrigerant.

In the silica gel process of refrigeration we merely substitute an adsorber filled with silica gel for the absorber filled with water or some other liquid. The system is similar to an ammonia absorption machine, but the granular solid silica gel is substituted for the water and the process is called adsorption instead of absorption. Many different refrigerants have been used, but most installations have been made with sulphur dioxide as the refrigerant on account of the very high rate of adsorption with this gas.

The adsorbing power of silica gel is so great that many systems have been installed with water as the refrigerant. In order to make water boil at a low enough temperature to produce satisfactory refrigeration it is necessary to maintain almost a perfect vacuum, about .04 inch of mercury. This means that if you place some dry silica gel and some water in separate dishes with both dishes under the bell of a vacuum pump and then exhaust the air we will see the water boil up actively and suddenly turn into ice.

What happens is that the exhausting of the air allows the water to evaporate slightly, maintaining its own natural vapor tension. This rarified water vapor is taken up so quickly by the silica gel that the water is kept very busy giving off more vapor (boiling) in an effort to maintain its normal vapor tension (balance between pressure and temperature). About one-seventh of the water will be suddenly evaporated in this way, robbing the remaining water of enough heat to leave it in the form of ice.

Since it is possible to do this with water, which boils at  $212^\circ \text{F}$ . under atmospheric pressure, it is obvious that much lower temperatures are easily obtained with a refrigerant such as sulphur dioxide, which boils at about  $13^\circ \text{F}$ . under atmospheric pressure.

Figure 1 is a photograph of a silica gel machine connected to a soda fountain. The soda fountain or ice cream cabinet does not differ in any way from those built for use with compressor type refrigerating machines. Liquid refrigerant is led into the cabinet through a small copper tube,

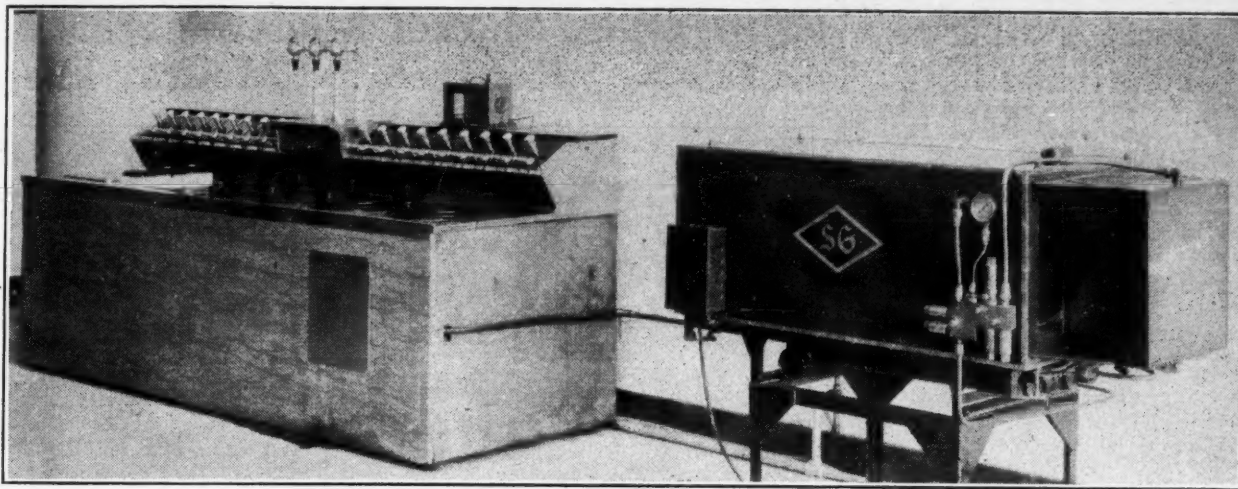


Fig. 1. Silica gel unit connected with a soda fountain

and the vaporized refrigerant returns from the cabinet to the machine through a larger copper tube.

Inside of the silica gel unit there are a large number of horizontal steel tubes, which are connected together by means of headers or manifolds. These tubes are filled with silica gel and are connected with the return, or suction, line, through which the vaporized refrigerant is returned from the cabinet to the machine. The tubular containers which can be seen just below the rectangular body of the machine form the receiver for liquid refrigerant; during the refrigeration portion of the cycle this liquid refrigerant is led to the evaporator, or cooling coils, in the usual way, control of the liquid usually being obtained by means of a low-side float. The vaporized refrigerant returns through the suction pipe and is adsorbed by the silica gel in the steel tubes above referred to.

This action can continue as long as there is a supply of liquid refrigerant and a sufficient adsorbing capacity in the gel. When the silica gel has reached its practical working limit of saturation, a gas

burner is automatically lighted to heat the adsorber, for the purpose of driving the refrigerant out of the gel. A check valve prevents the refrigerant from returning to the evaporator, hence it must pass into the condenser, which we see at the near end of the silica gel unit in Figure 1.

This activation process which drives the refrigerant out of the gel, condenses it, and delivers the liquid refrigerant back to the receiver, continues until practically all of the refrigerant has been driven out of the gel, at which point the fire is automatically shut off. As soon as the adsorber has cooled down, it begins to pull in more vapor, thus automatically starting the refrigerating portion of the cycle by merely cooling down the gel so that it will again adsorb the vaporized refrigerant.

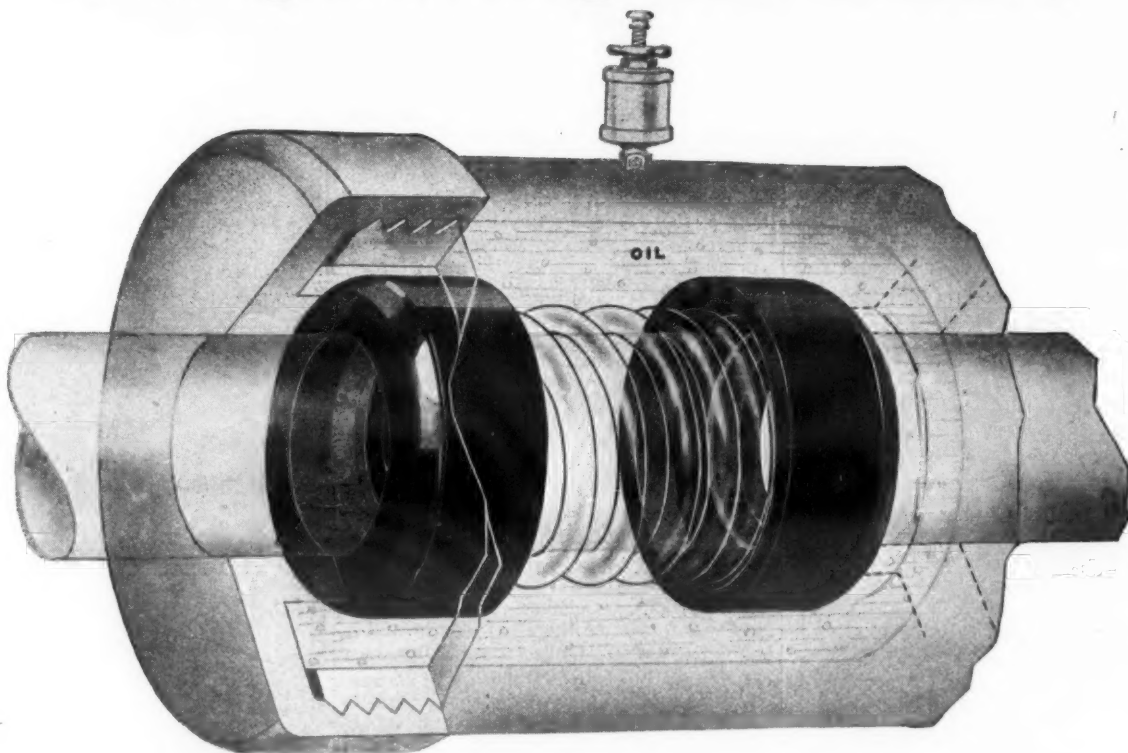
Figure 2 is a photograph of the burner end of a silica gel unit, whereas we see the condenser end of the unit in figure 1. The gas burner is under the near end of the machine as viewed in figure 2. The pipe connection coming up from the floor supplies the gas to the burner. On the near corner of the machine we can see the

automatic control which turns the gas off and on as required. The control also regulates shutters to direct the flow of air over the adsorber and over the condenser, as required. This flow of air is supplied by an electric fan located just back of the condenser.

The operating pressures employed in the machine illustrated herewith are practically the same as would be used with the same refrigerant in a motor driven compression machine. The refrigerant employed in the machine illustrated is sulphur dioxide. This action in the boiler or evaporator is exactly the same as if a compressor type machine were used, with the exception that there are no moving parts inside of the silica gel machine and hence no lubricating oil is mixed with the sulphur dioxide. This means that the temperature in the evaporator will be slightly lower than usual for the same suction pressure.

The temperature of the condenser and the pressure that it carries are practically the same as will be found on compression type sulphur dioxide machines.

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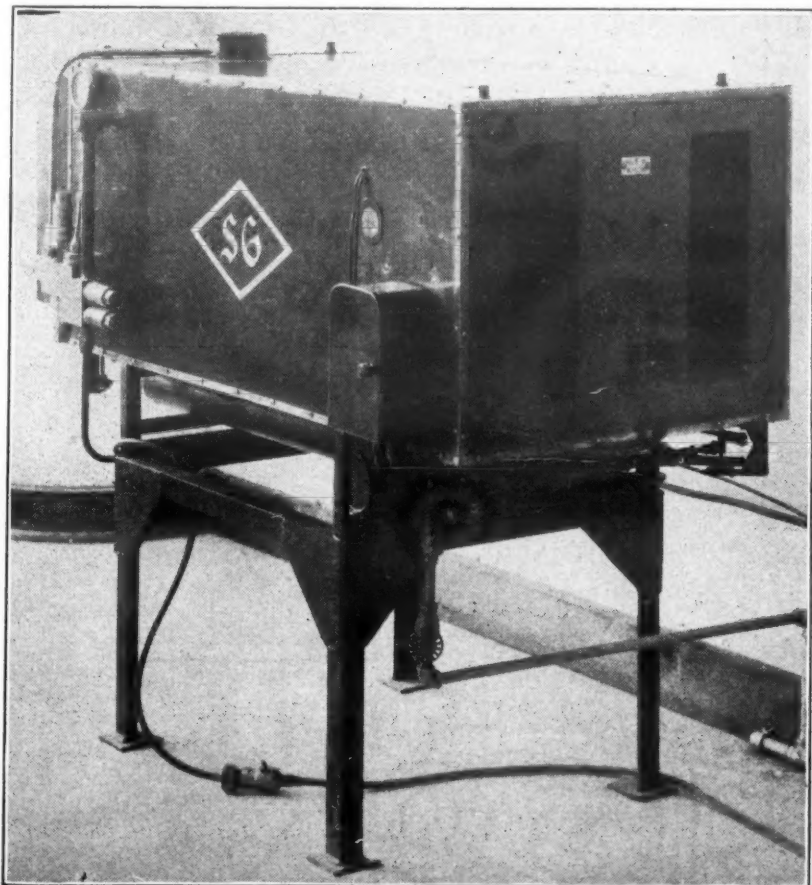


Fig. 2. Silica gel unit

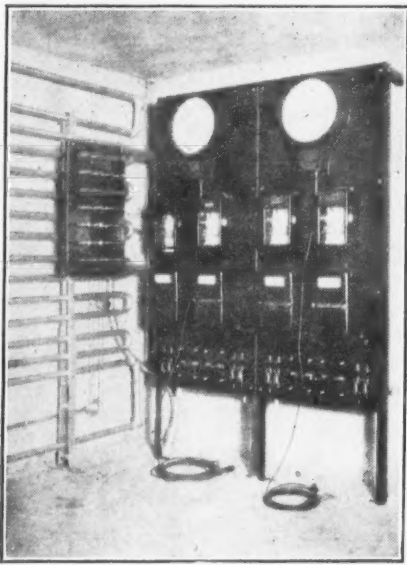


## ELECTRICAL TESTING LABORATORIES HAVE ADDED FACILITIES

### Cabinets Tested in Special Rooms Under Varying Conditions

There are three things which the prospective purchaser of an electric refrigerator is interested in. They are its effectiveness, its economy of operation, and its reliability. Fortunately, all three of these qualities are susceptible to accurate tests and measurements, and this sort of work is being done all the time at Electrical Testing Laboratories.

The Electric Refrigeration Committee of the N. E. L. A. has devised a schedule of testing which will demonstrate the effectiveness of the apparatus as a refrigerator and the economy of operation, and this schedule has come to be rather generally recognized as a standard test of performance. In the tests prescribed the refrigerator is operated for several days in a room where the temperature is maintained at a specified value, 70°, 80° or 90° F. respectively. Operation continues at each

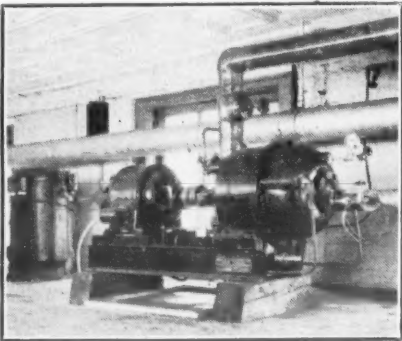


Temperature Control and recording board

ambient temperature until the temperature in the food compartment has been constant for a period of not less than eight hours. During this period the electrical energy input is measured.

Since refrigerators in service may have warm food placed in them at intervals, and since some heat enters whenever the doors of the box are opened, a kind of "load test" is also specified. A given amount of heat, 8 B. t. u. per hour, is liberated by an electric heater placed in the food compartment. During this test also the ambient temperature is maintained at a specified value, the energy input to the motor of the refrigerator is determined, the temperature of the food compartment is recorded and the energy input to the "loading heater" is measured.

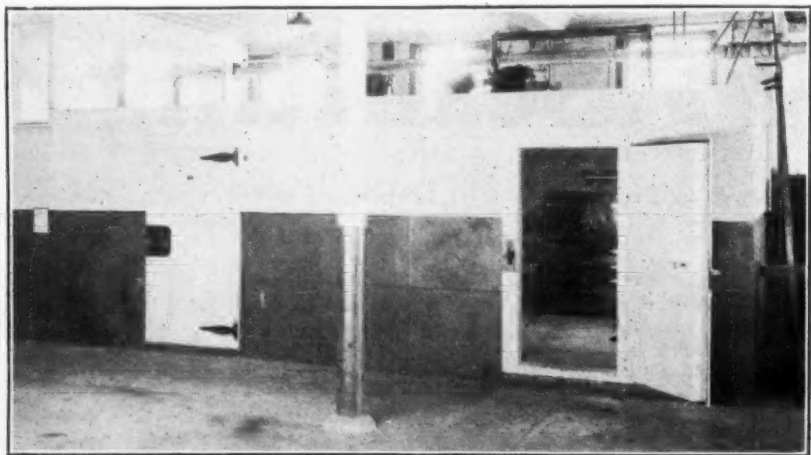
A third test called Ice Test is made by



Refrigeration apparatus to control room temperatures

placing a weighed quantity of ice in the ice compartment and again taking temperature readings in the food compartment through an 8-hour testing period. The results obtained in this test give a means of comparison of the two methods of operation with the effects of the cabinet eliminated, and serve as a simple way of interpreting the results obtained in the first test.

In order to carry out tests along these



General view of the two heat-insulated testing rooms

## Tiffin, Ohio, Market Modernized with Two New Electrically Refrigerated McCray Display Cases



One of the first installations of the new model 104 McCray display case was made in the market of W. J. Saylor, in Tiffin, Ohio, where two electrically refrigerated cases, 12 and 16 feet long respectively, are now in service

lines the Electrical Testing Laboratories has constructed two rooms each having a floor space, in the clear, of about 120 sq. ft., in which the temperature may be maintained at any specified value between approximately 20° F. and 120° F. The walls, floors and ceilings of these rooms are insulated with 4-inch slabs of cork so that the rate of flow of heat to or from a room is very small. Cooling in the rooms is effected by means of a small refrigerating plant which circulates a refrigerant through pipe coils placed about the walls of the rooms; heat for the higher temperatures is furnished by electric heater coils placed around the rooms below the pipe coils. Both pipe coils and heaters may be seen in the accompanying photographs. The general method of operation consists in supplying continuously a small amount of heat in the heater coils and then regulating the temperature by intermittent operation of the refrigerating machine.

The desired ambient temperature is maintained by means of a sensitive thermostat which will hold a given temperature within less than 1.5° F. This thermostat is mounted on a movable stand (see photographs) and may be placed adjacent to the box under test so that the air near the refrigerator is automatically held at the desired temperature. However, the distribution of temperature in the room has proven to be very uniform, the maximum deviation from the average value being less than 5° F. A recording thermometer is used to make a continuous record of room temperature.

The measuring equipment in a room consists of recording thermometers for making records of the temperatures of the ambient air and of the food compartments of the refrigerators, graphic ammeters to show the number of periods of operation of the refrigerating machines and their duration, and watt-hour meters to show the total electrical energy consumed during the test period. Similar electrical equipment is also provided to record the input to the "standard load" in the "load test."

A number of electric circuits terminate in each room permitting the operation of any type of electrical refrigerator and a storage battery is used to furnish the energy for the standard load.

While economy tests are being made in one room, endurance tests may be in progress in the other room. The same equipment is available for maintaining ambient temperature and for recording the performance of the machines through the endurance test.

Reports issued by the Laboratories include a description of the refrigerator tested together with photographs, a description of the methods employed in making the various tests, the observed data and final calculated results, together with diagrams—all of which are in such form that they can be compared directly with similar data published by the N. E. L. A. Committee referred to.

### Frigidaire Man Goes to Seattle Credit Bureau

Robert H. Hughes, who has recently been credit and office manager of the Seattle sales office of the Frigidaire corporation, has been appointed as manager of the Northend branch of the Seattle Credit Bureau, on account of his years of experience in the credit field in this section of the Pacific Northwest.

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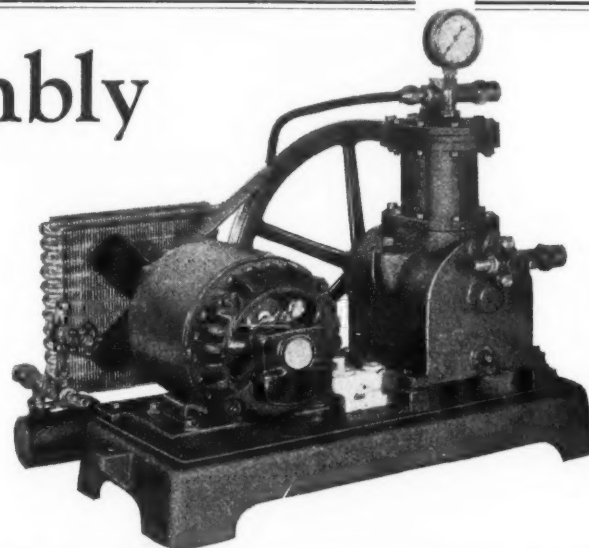
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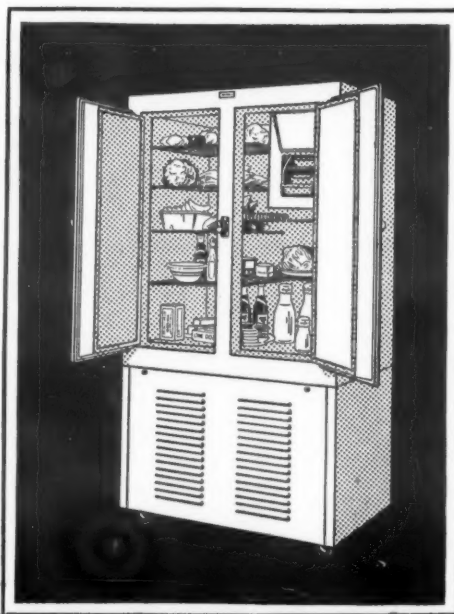
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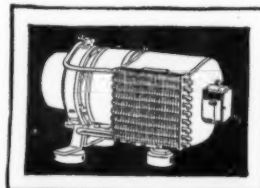


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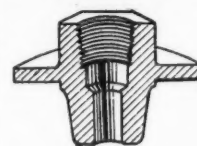


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6400 Plymouth Avenue St. Louis U. S. A.



## C. E. GREENWOOD IS APPOINTED COMMERCIAL DIRECTOR OF N. E. L. A.

C. Ernest Greenwood, of the Edison Electric Illuminating Company of Boston, began active duty on March 15 as director of the newly created commercial department of the National Electric Light Association. It is planned that this new department will function under the direction of the commercial national section of the N. E. L. A. in an advisory capacity on commercial and merchandising problems of the electrical industry and assist in stimulating commercial activities on the part of the industry, tending to increase kilowatt hour consumption and load density.

Mr. Greenwood was born in Boston, was graduated from Harvard and soon afterward entered the commercial department of the Boston Edison Co. He soon became interested in the work of the National Electric Light Association and served on the merchandising, refrigeration, range, commercial cooking and promotional rate committees.

Mr. Greenwood has for the past two years served as chairman of the general merchandising committee. He has also been active in the New England geographic division and is past chairman of the commercial section of that division and at present is chairman of the refrigeration committee.

In addition to these other duties he has been the editor of *Edison Life*, the publication for the employees of the Boston Edison Co., and has contributed articles on marketing to the electrical trade journals.

## FOREIGN SHIPMENTS OF ELECTRIC REFRIGERATORS

February Exports Reported by Bureau of Foreign and Domestic Commerce

	Refrigeration Sets up to 1-Ton Capacity	Number	Value
Austria	220	\$ 43,202	
Belgium	28	5,585	
Denmark	48	10,969	
France	2	1,109	
Germany	11	2,168	
Hungary	16	3,235	
Netherlands	34	6,315	
Norway	2	572	
Spain	39	6,059	
Sweden	2	445	
Switzerland	3	685	
United Kingdom	60	8,756	
Canada	320	75,037	
Costa Rica	3	1,239	
Guatemala	3	1,001	
Honduras	1	511	
Nicaragua	6	1,120	
Panama	1	314	
Mexico	11	3,624	
Newfoundland and Labr.	1	80	
Bermudas	5	848	
Barbados	4	740	
Other Brit. W. Indies	5	788	
Cuba	95	14,149	
Dominican Republic	8	2,165	
Dutch West Indies	2	360	
Virgin Islands of U. S.	1	261	
Argentina	78	14,085	
Brazil	135	27,549	
Chile	1	167	
Colombia	91	19,782	
Ecuador	1	280	
Peru	26	5,718	
Uruguay	7	1,400	
Venezuela	50	10,860	
British India	192	31,251	
British Malaya	8	1,991	
Ceylon	11	2,247	
China	3	558	
Java and Madura	25	5,553	
Other Dutch East Indies	2	277	
Hong Kong	21	4,211	
Japan	6	2,067	
Philippine Islands	65	12,870	
Siam	12	3,476	
Australia	62	12,675	
British Oceania	1	259	
New Zealand	14	3,016	
Union of South Africa	24	7,174	
Other Brit. So. Africa	27	4,830	
British West Africa	3	351	
Egypt	26	4,529	
Total	1,823	\$368,513	

"We believe that you have done a remarkable piece of work in co-ordinating all the electric refrigeration interests so that it is a common meeting ground."—C. A. Bryant, advertising manager, Narragansett Machine Co., Pawtucket, R. I.

## Valve Manufacturer Suggests Standardizing on 1/4 Inch Connections for Compressors

Specialists Offer Advice on Methods of Securing Economy and Preventing Service Difficulties

By J. S. Forbes, Treasurer, Kerotest Mfg. Co., Pittsburgh, Pa.

It is our opinion that the electric refrigeration business is going through the same stages of infancy as did the automobile industry. The manufacturer of automobiles first endeavored to make his own carburetors, starting equipment, and even his horns (he still continues to wear the horns), but has decided that it is a job for a specialist to make up a lot of the parts used in the assembly of his machine.

There seems to be little or no effort on the part of the manufacturers of compressors and equipment to standardize on threads or at least sizes of threads. Some concerns order valves with 3/8-inch pipe threads; others with 1/2-inch pipe threads, and still others with 3/4-inch pipe threads. Perhaps a happy medium could be obtained by ordering 1/2-inch pipe threads, and the same applies to the sizes of the SZE flare connection threads.

Large and expensive double shut-off valves are used when often a manufacturer could utilize a single shut-off valve, if properly packed, and with the addition of a seal cap to prevent leakage or infiltration of air.

A great many manufacturers have not appreciated the fact that no momentary tests may be made on valves, or, in fact, any other joint in a unit under pressure. After the service man completes his installation job, the valves are left in the closed or open position, as the case may be, and unless trouble is encountered, would not require it to be touched for several years. It is, therefore, our opinion that a valve may work perfectly the first six or eight months, and then fail miserably because the packing might deteriorate

in the presence of the gas; whereas, with the seal cap, this possibility is entirely eliminated.

The Kerotest company manufactures heavy steel gate valves for oil fields and refineries, and the major portion of its income is obtained from those sources. These valves run as large as 24-inch and weigh as much as four tons. Our lightest forged brass valve weighs one-half pound.

The name Kerotest has been coined from the combination of the words kerosene and test, originally a trade mark, indicating that the gate valves manufactured by this company have been kerosene-tested to reveal and search out defects and to ascertain dependability when placed in service, in fact, to invite trouble in our shops and eliminate the possibility of a customer encountering trouble due to a less severe test.

Oftimes a service manager is confronted with a problem on multiple installations and never thinks of presenting his problems to manufacturers of valves and equipment. We invite consultation and the opportunity to offer suggestions.

The Kerotest company has for sixteen years served the oxygen, hydrogen, carbonic gas, chlorine and sulphur dioxide manufacturers with forged brass valves for the transportation of their gases in drums, and this class of product has required the organization of forces most careful and painstaking, and we could not afford to make sloppy, cheap jobs on the same bench work requiring the greatest skill to hold gases often as high as 3,000 or 4,000 pounds per square inch. It has made over eight million valves since it entered this field.

## G. E. Unit Used in Augusta, Ga., Electrical Cooking School

The Augusta (Ga.) *Chronicle* recently sponsored a free electrical cooking school which opened on February 13 at the Houghton Auditorium in Augusta. Miss Viola Decker, instructor in domestic science and home economics, demonstrated electrical appliances which included a range, a hot water heater and a General Electric refrigerator loaned by the Young Electric Co.

## Store Installation Reduces Refrigeration Cost

The cost of refrigerating an 80-foot box in a Piggly-Wiggly store in Louisville has been cut from an average of 55 cents a day while using ice to 14 3/4 cents since installation of a Model H Copeland compressor unit. The current rate is 4 cents a kilowatt hour for this kind of refrigeration in Louisville.

## Stang Service In Larger Quarters

The Stang Service Company, Frigidaire dealer in Burlington, Iowa, has enlarged its salesroom on Fifth St. to make room for the display of a more complete line of electric refrigeration equipment.

## DISPLAY FOODS

Endorsed By  
General Electric Co.  
Copeland Sales Co.  
Trutlife Wax Products Co.  
27 Erie St., Milwaukee, Wis.

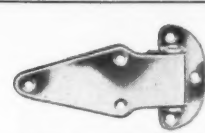


Complete Line  
Commercial Refrigerators  
Counters and  
Market Coolers  
for  
Electrical Refrigeration

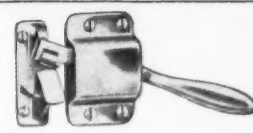
Ligonier Refrigerator Co.  
100 Cavin Street  
Ligonier, Indiana



Patented—Springless Automatic



Builders of Distinctive Refrigerator Hardware for



Patented TRIPLOCK

## Electric Refrigeration

WINTERS & CRAMPTON MFG. CO.  
GRAND RAPIDS, MICH.

## ELABORATE PROMOTION PLANS BEING MADE BY EASTERN MINNESOTA POWER COMPANY

The Eastern Minnesota Power Co., Pine City, Minn., with approximately 2,900 residential meters, sold 35 electric refrigeration units during 1927, according to C. R. Perkins, assistant general manager. These installations were divided, being both remote and self-contained types averaging 30 per cent remote and 70 per cent self-contained.

According to Mr. Perkins, the company is making elaborate plans for the promotion of electric refrigeration and has recently held both commercial sales and service schools for its field men who are now equipped to handle both domestic and commercial work effectively.

## Ansonia, Conn., Dealer Remodels Store

The Woodford Tire & Supply Co., Ansonia, Conn., recently appointed General Electric refrigerator dealers, have remodeled their store at the corner of Main and Mechanic streets to provide a better display for their electric refrigerators and radio sets.

## Burton Appointed Manager of Rochester League

Henry F. Burton, who joined the staff of the Electrical League of Rochester during the latter part of 1927, has recently been appointed secretary-manager of the League.

## Union Refrigerator Transit Co. Increases Capitalization

Capital stock of the Union Refrigerator Transit Co. of Milwaukee, Wis., is being increased from \$2,000,000 to \$3,500,000, according to B. A. Kiekhof, secretary-treasurer. New financing will consist of an issue of \$2,000,000 of 6 1/2 per cent preferred stock, to retire old stock and to provide additional working capital. No public offering will be made and no plant extensions are contemplated at present, Mr. Kiekhof stated.

"We wish to take this occasion to compliment you on your publication. Each publication is read from cover to cover and many ideas and improvements have been gathered from the information given."—Drayer & Hanson, 738 East Pico St., Los Angeles, Calif.

## Presenting 1928 Models of Bilt-Rite Electric Water Coolers

The Bilt-Rite Electric Water Cooler has a special appeal to Dealers and Salesmen because it is

DIFFERENT from competitive products. Most important, its very DIFFERENCE provides its unquestioned superiority, from a standpoint of operating efficiency.

## Designed for One Application—Water Cooling

Bilt-Rite presents to the field an Electric Cooling Unit which is engineered and designed specifically for water cooler and drinking fountain use. It represents the attainment of the focused effort of a group of engineers to produce the ideal electric water cooler. All known information on rapidity of heat transfer is incorporated in Bilt-Rite design.

## Easy to Sell

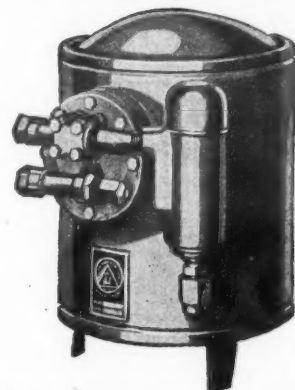
Salesmen will enjoy selling Bilt-Rite Water Coolers. With Bilt-Rite catalogs in hand, a job can be easily figured, and equipment specified on the spot. The Bilt-Rite possesses certain inherent points of superiority that cannot be denied. The salesman gains increased confidence with the knowledge that every Bilt-Rite which he sells will give his customer 100% service, economy of operation, and all-around satisfaction.

The Water Cooler Cabinets have been carefully planned to afford the buyer a variety of styles for almost any drinking water application.

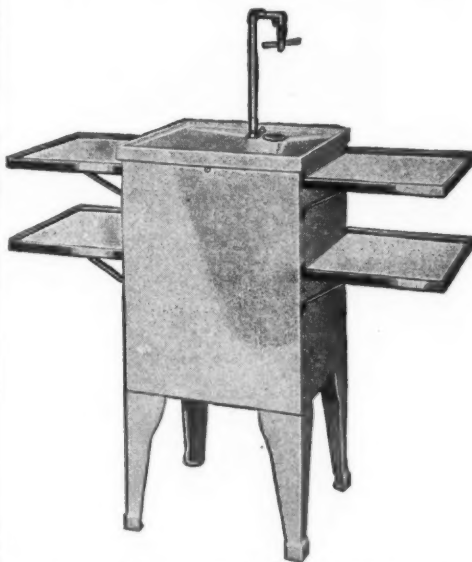
For Sale Everywhere by  
Kelvinator and Frigidaire Dealers

[ Our Research and Engineering Department is prepared with equipment and personnel to render service on all liquid cooling problems ]

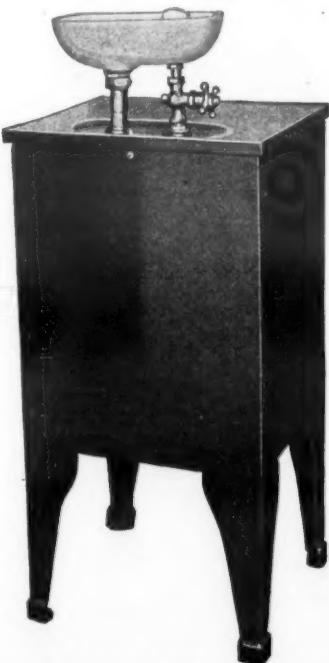
THE RUSS MANUFACTURING CO.  
5700 WALWORTH AVENUE CLEVELAND, OHIO



Bilt-Rite Cooling Unit with Automatic Emergency Suction Shut-Off permanently attached.



No. 656 Cabinet—Well adapted for Cafeterias. Finished in White Duco with Porcelain Enamel Top and four White Vitrolite Side Shelves.



No. 613 Cabinet—Built for factory or office installations. Finished in Sage Green Duco. Durable and sturdy—easy to keep clean and attractive.

EXTRA DRY ESOTOO

THE PUREST

SULPHUR DIOXIDE

Analysis Guaranteed

We have an agent, with our product in stock, near you  
Wire us where we can serve you

VIRGINIA SMELTING CO., WEST NORFOLK, VA.

F. A. EUSTIS, Secretary

131 STATE ST., BOSTON

2 RECTOR ST., NEW YORK



# Electric Refrigeration Directory

## Manufacturers of Machines, Cabinets, Materials and Parts

**ABSOLUTE CONTACTOR**  
(See advertisement in this issue.)  
Absolute Con-Tac-Tor Corporation, Elkhart, Indiana.



Manufacturers of Mercury CON-TAC-TORS and automatic electric controls for both refrigeration and oil burner installation.  
L. A. M. Phelan, pres.; Alex. Jager, vice-pres.; R. L. Patrick, sec. and treas.; L. E. Koch, chief engineer; J. Zwolanek, sales manager.

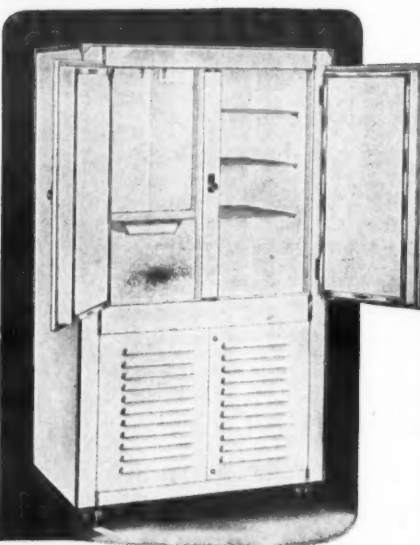
Absopure—See General Necessities Corp.

Acme White Lead and Color Works, Detroit, Mich.  
Manufacturers of lacquer enamels, clear enamels, oil enamels, interior refrigerator finishes, primers, sealers and varnishes.

Advance Electric Co., 6315 Maple Ave., St. Louis, Mo.  
Manufacturers of ADVANCE motors for commercial electric refrigeration machines.  
Edward Breich, pres.; A. L. Canavan, vice-pres.

Airplex Frigidarium Corp., Minneapolis, Minn.  
Manufacturers of AIRPLEX household refrigeration utilizing air as a refrigerating medium and gas or liquid fuel as a source of energy.  
L. H. England, president and general manager; A. F. England, vice-pres.; F. F. Zander, secretary and treasurer.

**ALASKA**  
(See advertisement in this issue.)  
The Alaska Refrigerator Company, Muskegon, Michigan.



Manufacturers of ALASKA electric refrigerator cabinets.  
E. J. Rook, pres.; J. L. Gillard, gen. mgr.; I. L. Collin, director of sales.

Albattross Steel Equipment Co., 1007 S. Grand Ave., Los Angeles, Cal.  
Manufacturers of sheet metal products.  
R. G. E. Cornish, pres.

Albaugh-Dover Mfg. Co., 21 Marshall Blvd., Chicago, Ill.  
Manufacturers of AD gears.  
P. A. Mortenson, pres.; O. Dover, vice-pres.; F. G. Eppley, vice-pres.; W. E. Smith, sec.; E. W. Buck, treas.; O. Dover, gen. mgr.; M. T. Welters, pur. agt.; W. R. Schwab, chief engr.; E. F. Eppley, wks. mgr.

The Allen Filter Co., 25-43 South St. Clair Street, Toledo, O.  
Manufacturers of water coolers for electric refrigeration.  
E. P. Mull, pres.; W. S. Ramsay, vice-pres.; fact. mgr., and pur. agt.; G. D. Taylor, sec.

All Sheet Metal Works, 2049 Elston Ave., Chicago, Ill.  
Manufacturers of household, commercial, ice cream and soda fountain electric refrigerator cabinets; water coolers; combination ice cream cabinets; water coolers; brine tanks and bunkers.  
P. J. Wanbach, pres.; L. C. Campbell, sec. and treas.

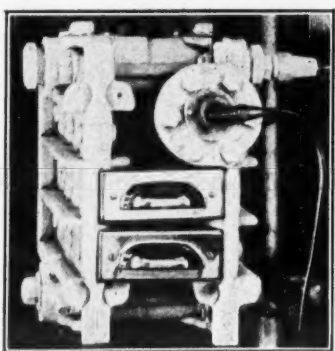
Aluminum Company of America, General Sales Office, Pittsburgh, Pa.  
Manufacturers of aluminum sheet and moulding for refrigerator trimming. Also aluminum ingot, permanent mould castings, die castings, sand castings, forgings, tubing wire, rod, aluminum bronze powder, aluminum screw machine products, stampings, and fabricated parts.  
R. E. Powell, commodity manager, Pittsburgh, Pa.

American Engine and Airplane Co., Los Angeles, Cal.  
Manufacturers of household electric refrigerators and control devices.  
Ralph M. Burdick is president.

**AMERICAN**  
(See advertisement in this issue.)  
American Engineering Co., Kensington Station, Philadelphia, Pa.  
Manufacturers of JURUICK commercial, ice cream and soda fountain units.  
Maxwell Alpern, pres.; W. V. Sauter, vice-pres.; C. L. Cushman, sec. and treas.; H. L. Lewis, sales mgr. refrigeration department; J. G. Worker, gen. sales mgr.; J. M. Combs, adv. mgr.; E. W. Schramm, pur. agt.; H. A. Peck, wks. mgr.; O. A. Johnson, fact. engr.

American Ice Machine Co., Glendale, Cal.  
Manufacturers of SNOW BIRD and AMERICAN domestic refrigeration and cabinets.  
L. P. Zahn, pres.; L. E. Zahn, vice-pres.; E. Z. Belden, sec.; George Cooper, pur. agt.; E. W. Brown, chief engr.; Frank Chase, adv. and sales promotion mgr.

**AMERICAN RADIATOR**  
(See advertisement in this issue.)  
American Radiator Co., New York and Chicago. Industrial Division, 816 S. Michigan Ave., Chicago. Factory at Springfield, Ill., and Detroit, Mich.



Manufacturers of AMERICAN domestic refrigerating units, automatic expansion valves, float valves and job castings per specifications. Accessories Division, 40 West 40th St., New York City. Factory at Detroit, Mich.  
Manufacturers of MERCOLD controls for domestic and commercial refrigeration.

American Rolling Mill Co., Middletown, O.  
Manufacturers of enameling stock, galvanized ARMO ingot iron, alloy coated steel, alloy coated ingot iron.

American Solder & Flux Co., 2910 No. 16th St., Philadelphia.  
Manufacturers of self-fluxing solders and fluxes.  
F. D. McBride, president.

Anderson Show Case Manufacturing Co., 321 N. E. Filmore St., Minneapolis, Minn.  
Manufacturers of domestic refrigerators for electric refrigeration and market display counters and coolers.

**ANSUL CHEMICAL**  
(See advertisement in this issue.)  
Ansul Chemical Co., Marinette, Wis.  
Manufacturers of ANSUL sulphur dioxide.  
F. G. Hood, pres.; H. V. Higley, sec.; W. E. Pfeiffer, chief chemist; L. C. McKesson, traffic manager.

Arcade Manufacturing Co., Freeport, Ill.  
Manufacturers of refrigerator hardware.  
Howard K. Gill, refrigerator hardware division.

Arcade Mfg. Co., 1212 E. Shawnee St., Freeport, Ill.  
Manufacturers of household and commercial refrigerator hardware, hinges, locks, corners, traps, etc.  
E. H. Morgan, pres.; L. L. Munn, vice-pres.; I. P. Gassman, sec.; B. C. Trueblood, treas.; L. L. Munn, gen. mgr.; I. P. Gassman, sales and adv. mgr.; T. J. Bordner, pur. agt.

Arlington Refrigerator Co., Inc., Arlington, Vermont.  
Manufacturers of ARLINGTON, ARCO and ARCOSTONE household electric refrigerator cabinets.  
John P. Munn, M.D., pres.; C. M. Rochester, treas.; A. M. Johnston, sec. and mgr.; A. M. Johnston, gen. mgr.; B. F. Leonard, sales mgr.; R. R. Casey, fact. mgr.

Armstrong Cork & Insulation Co., 24th St. and Allegheny River, Pittsburgh, Pa., Branch of Armstrong Cork Co. Factories at Beaver Falls, Pa., Camden, N. J., and Seville, Spain.  
Manufacturers of corkboard insulation; cork pipe covering.  
C. D. Armstrong, pres.; C. D. Armstrong, vice-pres.; C. D. Armstrong, Jr., gen. mgr.; N. M. Whitten, sales mgr.; S. L. Barnes, adv. mgr.; E. E. Baker, pur. agt.

Armstrong Machinery Co., Spokane, Wash.  
Manufacturers of ammonia compressors and refrigerating equipment. Domestic, butcher, hotel, creamery, restaurant or packing plant equipment, 17 sizes, in 24 to 30 ton capacity. Trade names, SPOKANE, SIBERIAN, ALASKA, ICELANDER, CHILKOOT.  
D. F. Kizer, pres.; L. B. Armstrong, vice-pres.; Stanley Mayall, sec.-treas.; Harry Mayall, sales mgr.

**ATLAS PLYWOOD**  
(See advertisement in this issue.)  
Atlas Plywood Corp., 934 Park Square Bldg., Boston, Mass. Factories at Stockholm, Me., Greenville, Me., Richmond, Vt., Montgomery Center, Vt., Morrisville, Vt.  
Manufacturers of ATLAS refrigerator cases, plywood shipping containers for refrigerators.  
R. M. Buck, pres.; E. I. MacPhie, vice-pres.; E. M. Soucy, treas.

Audiffren Refrigerating Machine Co., 285 Madison Ave., New York, N. Y.; factory at Jersey City, N. J.  
Manufacturers of AUDIFFREN electric refrigerating machines for household and commercial use.  
E. T. Hargrove, pres.; K. D. Perkins, vice-pres. and treas.

**AUTOMATIC FREEZER**  
(See advertisement in this issue.)  
Automatic Freezer Syndicate, Office, 1716 Ford Bldg., Detroit.  
Manufacturers of CARE-FREE commercial and household electric refrigerators, specializing in corrosion-proof self-dehydrating systems.

**AUTOMATIC RECLOSING**  
(See advertisement in this issue.)  
The Automatic Reclosing Circuit Breaker Co., Sixth and Wesley Aves., Columbus, Ohio.  
Manufacturers of thermostats for refrigerator control, magnetic switches, automatic reclosing circuit breakers, starters, contractors, relays and switches.  
E. C. Raney, general manager and chief engineer; C. M. Hickie, sales manager.

Baker Ice Machine Co., Inc., 3601 N. 16th St., Omaha, Neb.  
Manufacturers of BAKER SYSTEM electric refrigeration units for commercial, ice cream and soda fountain use, pumps and compressors, coils.  
J. L. Baker, pres.; Charles Knox, vice-pres.; F. J. Vette, sec.; C. A. Baker, treas.; L. W. Morris, sales mgr.; R. C. Hudson, adv. and sales promotion mgr.; C. A. Baker, pur. agt.; Charles Knox, chief engr.; J. H. Coesfeld, supt.

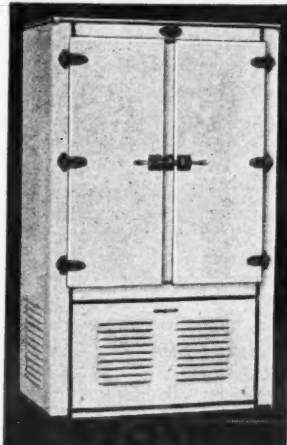
Baldwin Refrigerator Co., Burlington, Vt.  
Manufacturers of refrigerator cabinets.  
George A. Hall, pres.; Ernest E. Smith, sec. and mgr.; H. T. Rutter, treas.

Banta Refrigerator Company, Clearfield, Pa.  
Manufacturers of BANTA commercial cabinets.

L. A. Banta, pres.; W. A. Walker, vice-pres.; J. Lewis Irvin, sec.; F. B. Kerr, treas.; W. J. Walker, gen. mgr.; W. B. McBride, pur. agt.; G. F. Banta, supt.

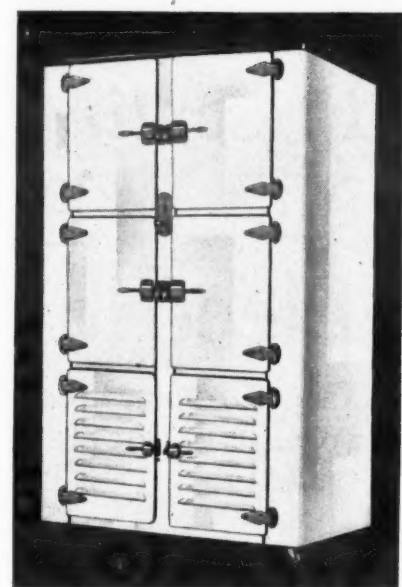
Beaver Machine & Tool Company, Inc., 625 North Third Street, Newark, N. J.  
Manufacturers of various wire device connections such as attachment plugs.  
Ernest B. Slade, pres. and treas.; Harold E. Slade, vice-pres. and sec.; Ernest B. Slade, gen. mgr. and sales mgr.; Harold E. Slade, adv. mgr. and pur. agt.; John Gehring, chief engr.; Louis E. Eisele, fact. supt.

Belding-Hall Electric Corporation, Belding, Mich.; Brinton F. Hall, U. S. Court Receiver.



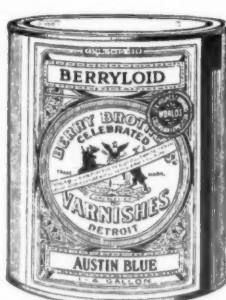
Manufacturers of Belding-Hall ELECTRIC household electric refrigerators and Belding-Hall household and commercial cabinets.

**BENJAMIN CRYSTEEL**  
(See advertisement in this issue.)  
Benjamin Electric Mfg. Co., 128 S. Sangamon St., Chicago, Ill. Factory at Des Plaines, Ill.



Manufacturers of BENJAMIN CRYSTEEL cabinets for household and commercial electric refrigerators; enameling; refrigerator linings; seamless, porcelain enameled.  
R. B. Benjamin, pres.; J. H. Fall, Jr., vice-pres. and treas.; W. D. Steele, vice-pres. and sec.; G. B. Weber, mgr. refrigerator sales; E. A. Drake, works mgr.; E. D. Pellegrin, engineer refrigeration department; R. W. Stand, mgr. adv. and sales pro.

Berry Brothers, Inc., 211 Leib St., Detroit, Mich.



Manufacturers of BERRYLOID LACQUER LIONOIL, enameling, rustproofing materials, varnishes and stains.  
F. L. Colby, pres.; W. R. Carnegie, vice-pres.; George V. Blenkarn, treas.; F. L. Colby, Jr., secretary.

Bishop & Babcock Sales Co., general offices, 4901-5915 Hamilton Ave. N. E., Cleveland, Ohio. Branch offices, 444 Lafayette St., New York City; 112 W. Austin Ave., Chicago; 230 Mitchell St. S. W., Atlanta; 210 South Broadway, St. Louis; 412 Third Ave., Pittsburgh; 1106 Commerce St., Dallas; 1025 Central Ave., Cincinnati; 1925 Main St., Kansas City; 1724 Lawrence St., Denver; 680 E. Minnehaha St., St. Paul, and 1894 East 9th St., Cleveland.  
Manufacturers of RED CROSS soda fountains, cafeteria and restaurant equipment.

**BOHN SYPHON**  
(See advertisement in this issue.)  
Bohn Refrigerator Company, 1350 University Ave., St. Paul, Minn.  
Manufacturers of Bohn SYPHON cabinets for household electric refrigerators.  
G. C. Bohn, pres.; Harold H. Bohn, vice-pres.; R. H. Ames, sec. and treas.; Abner Davis, Jr., sales mgr.; George Young, comptroller; P. O. Schneider, traffic mgr.; H. O. Fitch, order department; A. M. Hoff, works mgr.; Fred Frough, fact. supt.; T. L. Elliott, New York store mgr.; A. M. Nordland, Chicago store mgr.; B. L. von Nieda, Boston store mgr.

**BRADLEY-HURTZ**  
(See advertisement in this issue.)  
Bradley-Hurtz Co., 2626 S. Dearborn, Chicago, Ill.  
Manufacturers of enamels, lacquers, varnishes and paints.  
Franklin Bradley, pres.; Frederick J. Hurtz, vice-pres.; W. H. Steiner, northwestern sales mgr.; Edw. Slowey, dist. sales mgr.; 2200 Madison Rd., Cincinnati, O.; C. H. Dragert, 368

Oakland, Brooklyn, N. Y. (mgr. N. Y. Branch factory); J. W. Longworth, dist. sales mgr.; 1935 Plainfield Ave., Grand Rapids, Mich.

Brooks Cabinet Co., Inc., 1023 West 27th St., Norfolk, Va.  
Manufacturers of BROOKS CABINETS for household, commercial, ice cream and soda fountain electric refrigerators; water coolers.  
C. H. Brooks, pres.; C. T. Brooks, vice-pres.; J. N. Taylor, sec.-treas.

Brunswick-Kroeschell Co., Jersey Ave., New Brunswick, N. J.  
Manufacturers of BRUNSWICK commercial electric refrigerators, other control devices.  
James W. Johnson, pres.; Sydney B. Carpenter, vice-pres. and gen. mgr.; Arnold H. Goetz, vice-pres. and chief engr.; Robert A. Kroeschell, sec. and sales mgr.; William Carpenter, treas.; H. Harrison, adv. mgr.; Walter Jones, prod. mgr.

Bryant Electric Refrigerator Corp., New Milford, Pa.  
Manufacturers of BRYANT domestic electric refrigerators.

Bryant Pattern & Mfg. Co., 702-710 St. Antoine St., Detroit, Michigan.  
Manufacturers of commercial refrigerating machines of 300 to 400 pounds capacity for ice cream cabinets, butcher display cases, etc., together with compressors, patterns, dies, etc.  
A. W. Bryant, vice-pres. and engr.; E. S. Bryant, sec.-treas. and mgr.; A. W. Bryant, pur. agt.; E. J. Mamer, sales and adv. mgr.; E. S. Bryant, fact. mgr.

**BUSH CONDENSER**  
(See advertisement in this issue.)  
Bush Mfg. Co., 100-110 Wellington St., Hartford, Conn.

Manufacturers of seamless copper tubing condensers with individual fins.  
Richard J. Goodman, pres.; James W. Hatch, gen. mgr.; Charles W. Cookley, prod. mgr.; O. L. Seward, engr.; Edward M. Flannery, pur. agt.

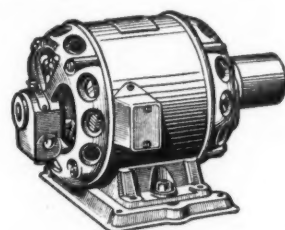
Calvert Electric Refrigeration Co., Woodberry, Baltimore, Md. Division of Poole Engineering and Machine Co.  
Manufacturers of CALVERT domestic electric refrigerators.  
S. Proctor Brady, pres. and gen. sales mgr.; A. R. Earnshaw, first vice-pres.; Dudley Shoemaker, second vice-pres.; R. D. Alexander, treas.; J. J. Byrne, prod. mgr.

Cameo Refrigerator Corporation, 973 North Main Street, Los Angeles, Cal. Factories at Los Angeles and Vernon, Cal.  
Manufacturers of CAMEO cabinets; enamels.  
Joseph T. Penton, pres.; R. B. Ahlswede, vice-pres.; N. W. Neice, sec. and sales mgr.; E. E. Radeck, treas. and gen. mgr.; Earl Bartholomew, fact. mgr.

Campbell-Shirk Co., 3200-10 Auer Ave., Milwaukee, Wis.  
Manufacturers of commercial, hospital, and special refrigerators for electric refrigeration.  
R. F. Campbell, pres.; G. C. Kohlhardt, sec.-treas.; Harry Buechler, supt. of fact.

Castle Refrigerating Machine Co., 138 Neal St., Indianapolis, Ind.  
Manufacturers of complete units for commercial use, 2 to 15 tons; electric refrigeration equipment for ice cream manufacturing; ammonia condensers; brine tanks for commercial use.  
O. H. Castle, manager and owner.

Century Electric Company, 1806 Pine Street, St. Louis, Mo.



Manufacturers of motors for household and commercial electric refrigerators.  
E. S. Pillsbury, pres.; R. J. Russell, vice-pres. and sec.; J. L. Woodress, sales mgr.

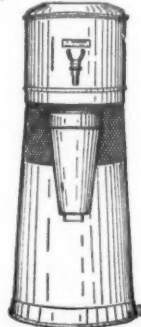
**CHAMPION**  
(See advertisement in this issue.)

Champion Electric Co., Diversey Blvd. & Paulina St., Chicago, Ill.  
Manufacturers of CHAMPION ELECTRO ICER machines for household and commercial use, motors, pumps and compressors, condensers and expanders.

Challenge Refrigerator Co., Grand Haven, Mich.  
Manufacturers of CHALLENGE cabinets for household electric refrigerators.  
H. F. Harbeck, pres.; W. H. Harbeck, vice-pres.; B. F. Harbeck, sec.-treas.

Chicago Mill & Lumber Co., 510 North Dearborn St., Chicago, Ill.  
Designers and manufacturers of boxes and crates for the shipment of refrigerator cabinets, units and parts.  
W. P. Paepcke, pres.; W. D. Burr, sales mgr.

**CLEVELAND**  
(See advertisement in this issue.)  
Cleveland Iceless Cooler Co., 971 E. 63rd St., Cleveland, Ohio.



Manufacturers of KOLDSTREAM electrical refrigerated water coolers.  
E. H. Baker, Jr., president; John C. Barker, vice-president; H. H. Burton, secretary; J. E. Tomer, assistant secretary; E. H. Baker, Jr., treasurer; J. E. Tomer, assistant treasurer; C. E. Yates, sales and engineering.

Climax Electrical Refrigeration Co., 4th St. at 18th Ave., Clinton, Iowa. Subsidiary of the G. W. Dulany Trust, 111 W. Monroe St., Chicago, Ill.

Manufacturers of CLIMAX Electric Refrigeration units for household, ice cream cabinet, soda fountain, florist, delicatessen and general commercial purposes.  
G. W. Dulany, Jr., chairman of the board, Chicago, Ill.; E. B. Mallory, pres. Chicago, Ill.; E. F. Deacon, vice-pres., Chicago, Ill.; W. E. Eberhart, Jr., treas., Chicago, Ill.; J. M. Thompson, sec., Chicago, Ill.; R. L. Alexander, director of engineering and manufacturing, Clinton, Iowa; J. N. Palmer, sales mgr. and director of pub., Clinton, Iowa; Walter Johnson, pur. agt., Clinton, Iowa; C. W. Albertson, research engr., Clinton, Iowa.

Clover-Olson Refrigerator Co., 6551 San Pablo Ave., Oakland, Calif.  
Manufacturers of CLOVER-OLSON electric refrigerators for household, commercial, ice cream and soda fountain use; pumps and compressors; float valves, automatic pressure controls, ammonia machine to 6-ton capacity.  
E. F. Clover, pres.; C. F. Olson, sec.-treas.; D. P. Eicke, vice-pres.

Coldak Corp., 8 West 40th St., New York, N. Y. Factories at Springfield, Mass.; Providence, R. I., and Muskegon, Michigan.  
Manufacturers of COLDKAK electric refrigerators for household and commercial use.  
J. H. Pardee, pres.; E. J. Rock and C. M. Burnhome, vice-pres.; T. W. Moffat, treas.; H. B. Brown, sec.; Hazor J. Smith, chief engr.; C. B. Shepard and W. A. Blackwood, assistant engr.; W. B. Reed, serv. mgr.

Commercial Refrigerator Mfg. Co., 927-35 S. Los Angeles St., Los Angeles, Cal.  
Manufacturers of SUPER-BILT fixtures.

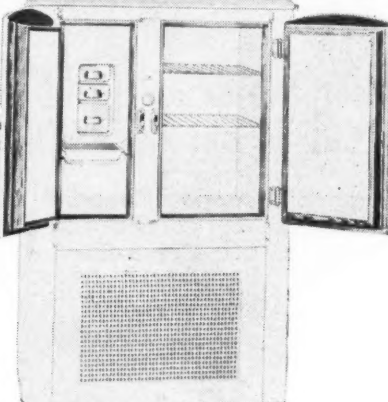
Common Sense Ice Machine Co., 1844 W. 14th St., Chicago.  
Manufacturers of intermittent gas-operated absorption-type refrigerating machines.

**COMMONWEALTH BRASS**  
(See advertisement in this issue.)  
Commonwealth Brass Corporation, 5781-5835 Commonwealth Ave., Detroit, Mich.  
Manufacturers of brass pipe and tube fittings, forged brass parts, and automatic screw machine products.

**COOKE SEAL**  
(See advertisement in this issue.)  
Cooke Seal Ring Co., 20 N. Green St., Chicago, Ill.  
Manufacturers of COOKE Seal Rings.  
George J. Cooke, pres. and treas.; George J. Cooke, Jr., vice-pres.; Robert E. Cooke, sec.

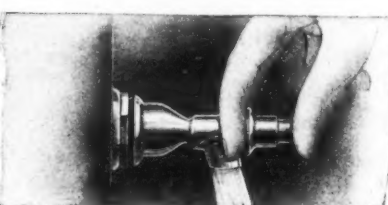
Cooke Electric Refrigeration Co., 14-30 N. Green St., Chicago, Ill.  
Manufacturers of COOKE electric refrigeration units for household, commercial and ice cream cabinets.

**COPELAND PRODUCTS**  
(See advertisement in this issue.)  
Copeland Products, Inc., Detroit, Mich.



Manufacturers of COPELAND commercial and household refrigerators.  
William Robert Wilson, pres.; George W. Mason, vice-pres. and gen. mgr.; Edwin H. Brown, secy. and treas.; D. E. Knowles, asst. secy., treas. and comp.; W. D. McElhinny, vice-pres. in charge of sales; A. M. Taylor, adv. and sales promotion mgr.; C. W. Hadden, executive staff; B. P. Watkins, pur. agt.; Glen Muffy, chief engr.; S. W. Taylor, fact. mgr.; E. L. Barger, serv. mgr.

**CORDLEY & HAYES**  
(See advertisement in this issue.)  
Cordley & Hayes, 1 Leonard St., New York City.

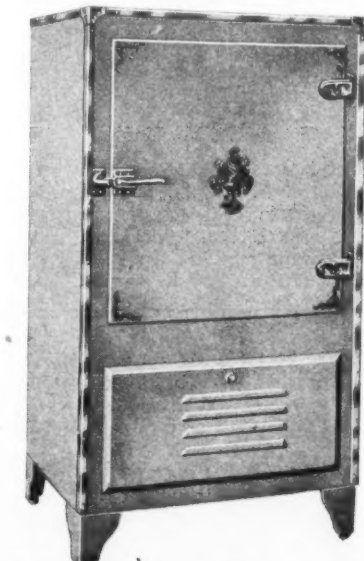


Manufacturers of drinking water faucets for water coolers and refrigerators with water cooling equipment.

**CORK IMPORT**  
(See advertisement in this issue.)  
Cork Import Corp., 345 W. 40th St., New York, N. Y. Factories at Port Newark, N. J., and at Palafrugell, Palamos Figueras Bagur Santa Cristina, Fegenal de la Sierra and Caceres, Spain.  
Manufacturers of NOVOID corkboard, NOVOID cork covering.  
H. H. Straus, pres.; W. V. Landeck, vice-pres.; T. N. Word, secy. and treas.; J. H. Stone, gen. sales mgr.; Wm. E. Grune, chief engr.; J. L. Bauer, sales mgr.; F. G. Carr, Jr., asst. sales mgr.; A. W. Morse, adv. agt.; and P. Eberle, pur. agt.

Crosley Radio Corp., Cincinnati, Ohio.  
Manufacturers of ICYBALL refrigeration units and cabinets.  
Powel Crosley, Jr., pres.; Lewis M. Crosley, asst. gen. mgr.

**CRYSTAL**  
(See advertisement in this issue.)  
Crystal Refrigerator Co., Fremont, Neb.



Manufacturers of CRYSTAL and WHITE-STEEL household and commercial cabinets, chocolate candy display cases and grocers' display cases.  
Frank Hammond, pres.; Dan V. Stephens, vice-pres.; Earl R. Hammond, secy.; R. E. Hammond, treas.



## Electric Refrigeration Directory (Continued)

## DENT

(See advertisement in this issue.)

The Dent Hardware Co., Fullerton, Pa. Manufacturers of hardware (fasteners, latches, corners, traps, hinges, etc.) for domestic and commercial electric refrigerators.

H. H. Dent, pres.; H. P. Newhard, secy. and gen. mgr.; C. C. Kaiser, treas.; H. C. Dent, asst. sales mgr.; and John A. Storm, fact. mgr.

Dillingham Manufacturing Co., Sheboygan, Wis. Manufacturers of ICEBERG cabinets for domestic electric refrigeration.

Harry E. Barrows, pres.; O. H. Clark, vice-pres. and treas.; A. D. Barrows, chairman board of directors; Keith Osborn, secy.; O. J. Loersch, asst. mgr.

Dole Refrigerating Machine Co., 1209 Washington Blvd., Chicago.

Manufacturers of DOLECO refrigerating machinery for commercial and domestic use.

Andrew R. Dole, pres.; H. W. Kleist, vice-pres.; F. H. Tweed, treas.; J. D. Hollowell, secy. and gen. mgr.

The Domestic Electric Co., 7200 St. Clair Ave., Cleveland, Ohio.

Manufacturers of DOMESTIC motors for household and commercial electric refrigerators.

C. A. Duffner, pres.; M. H. Spielman, vice-pres.; A. N. Kellogg, treas.; C. A. Duffner, gen. mgr.; E. S. Sabin, sales mgr.; M. W. Phelps, pur. agt.; J. D. Cole, chief eng.; W. H. Poesse, works mgr.

## DOMESTIC

(See advertisement in this issue.)

Domestic Electric Refrigerator Corp., 2 West 40th St., New York City.

Manufacturers of ALLISON electric refrigerators.

Julius F. Holmes, pres.; John F. Plummer, vice-pres. and gen'l mgr.; Hamilton L. Shields, treas.; Howard E. Murphy, sales mgr.; and J. A. Sturges, sales promotion and adv. mgr.; L. K. Baxter, service mgr.; George Hoite, prod. mgr.

Downing Manufacturing Co., Downing, Wisconsin. New York Export office, 55 West 42nd St.

Manufacturers of commercial refrigerators. Specializing in refrigerator display counters, for use with either ice or electric refrigeration.

D. C. Coolidge, pres.; E. C. Wagner, vice-pres.; R. A. Cleveland, sec. and treas.

Drayer-Hanson Inc., 738-42 E. Pico St., Los Angeles, Calif.

Manufacturers of refrigerators, domestic and commercial, ice cream cabinets, bottle coolers, water coolers and all types of delivery bodies.

Dunning Pump & Manufacturing Company, (See Kulair Corp.).

E. I. DuPont de Nemours & Co., Inc., Chemical Products Division, Parlin, N. J.

Manufacturers of chemicals, paint, DUPONT DUCO and varnish, finishing materials.

Dry-Kold Refrigerator Co., Niles, Mich.

Manufacturers of DRY-KOLD household and commercial refrigerators and display cases.

W. F. Harrah, pres.; Joseph P. Troost, vice-pres.; W. C. Whittecher, treas.-gen. mgr.

Dry-Zero Corporation, 130 North Wells St., Chicago, Ill.

Manufacturers of DRY ZERO pliable and blanket insulation.

Harvey B. Lindsay, pres. and gen. mgr.; F. S. Young, vice-pres.; E. T. Munson, secy. and treas.; J. J. Hagan, asst. secy.; D. E. Baum, asst. treas.; Gale T. Pearce, eng. in charge of sales; and A. L. Clements, fact. supt.

D. A. Ebinger Sanitary Mfg. Co., 180 Lucas St., Columbus, O.

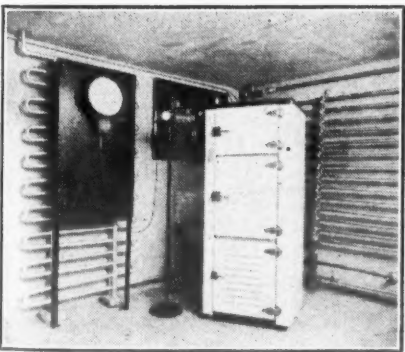
Manufacturers of EBCO water coolers.

D. A. Ebinger, pres.; D. H. Ebinger, vice-pres. and gen. mgr.; H. H. Luekart, secy.; D. A. Ebinger, treas.; H. H. Luekart, sales mgr.; A. E. Smith, refrigeration dept. sales mgr.; J. A. Tharpe, pur. agt.

## ELECTRICAL TESTING

(See advertisement in this issue.)

Electrical Testing Laboratories, 80th St. and East End Ave., New York, N. Y.



Test reports and data on overall performance or on electrical, mechanical or chemical equipment; reports and data are client's property.

John W. Lieb, pres.; C. H. Sharp, Ph.D., vice-pres. and technical director; Preston S. Millar, gen. mgr.; F. Malcolm Farmer, M.E., chief eng.

## ELECTRO-KOLD

(See advertisement in this issue.)

Electro-Kold Corp., 151 S. Post St., Spokane, Wash.



Manufacturers of ELECTRO-KOLD electric refrigeration units for household, commercial and apartment use.

X. L. Anthony, pres.; L. J. Kimmel, vice-pres. and engr. in charge of research; E. S. Matthews, secy.-treas. and sales mgr.; H. L. Masterson, vice-pres. and gen. mgr.; D. W. Andrew H. Doolittle, dist. mgr., 5813 Sunset Blvd., Los Angeles, Calif.

Elkins Refrigerator and Fixture Co., 5201 Denison Ave., Cleveland. Factory at Elkins, W. Va.

Manufacturers of commercial refrigerators, refrigerator display counters and other equipment used in meat markets, delicatessens and groceries.

Erie Art Metal Co., Erie, Pa.

Manufacturers of DAN-DEE pressed steel specialties and of mechanical refrigeration cabinets.

W. H. Knobloch, pres. and gen. mgr.; A. F. Schabacker, vice-pres.; E. Bauschard, secy. and treas.

## ESCO

(See advertisement in this issue.)

Esco Cabinet Co., West Chester, Pa.

Distributing sales organization and manufacturers of ESCO electric milk cooling cabinets.

Harry E. Cann, Merrill B. Cann, officers and owners; Richard Markley, chief engineer.

Everite Products, Inc., Dayton, Ohio.

Manufacturers of EVERITE compressors and cooling units for domestic and commercial use.

E. P. Larsh, pres.; F. C. Geiler, vice-pres.; H. E. Kline, treas.; J. A. Wortman, secy.

Electric Refrigeration Corp. (See Kelvinator, Inc.).

## EXCELSIOR

(See advertisement in this issue.)

Excelsior Motor Manufacturing & Supply Company, 3701 Cortland St., Chicago.

Manufacturers of EXCELSIOR refrigerating machines for commercial work in one-fourth, one-half, and one-third ton capacities; also of drop-forged valves, fittings and flanges for other refrigerating machines of similar size.

Ignaz Schwinn, pres. and treas.; Frank W. Schwinn, vice-pres. and gen. mgr.; J. M. Grossmith, secy.; E. W. Crawford, refrigeration sales mgr.; D. E. Rautshausen, mgr. service engineering; A. P. Anderson, chief eng.; Wesley G. Paulson, adv. mgr.; J. E. Anderson, pur. agt.

Fairfield Mfg. Co., 82-106 St. John St., Portland, Me. Factories at Portland and Fairfield.

Manufacturers of EVERCOLD household and commercial electric refrigerator cabinets.

Gilbert Oakley, pres.; J. W. Thomas, treas.

Fedders Mfg. Co., Buffalo, N. Y.

Manufacturers of condensers, float valves and evaporators. Brine tanks; freezing units; expansion valves; liquid receivers; filters; strainers; trays and grids.

F. Fedders, pres.; J. M. Fedders, vice-pres.; C. W. Fedders, vice-pres.; T. C. Fedders, treas.; H. M. Yeager, vice-pres.; H. L. Heitzman, secy.

Federal Asbestos & Cork Insulation Co., 931 30th St., Milwaukee, Wis.

Manufacturers of FEDERAL cabinets for household and commercial electric refrigerators.

Charles Dieringer, pres.

Federal Gauge Co., 564 W. Adams St., Chicago, Ill. (See Mercoid Corp.).

## FERN-GLOVER

Fern-Glover Refrigerator Corp., Linwood Rd. & Pennsylvania R. R., Cincinnati, Ohio.

Manufacturers of LIFE LONG cabinets. B. L. Fern, pres.; Gilbert Glover, vice-pres. and treas.; Andrew Engelhardt, secy.; B. L. Fern, chief engr.; Gilbert Glover, gen. supt.; Andrew Engelhardt, office mgr.; George Glover, works supt.

Ferro Enamel Supply Co., 2100 Keith Building, Cleveland, Ohio.

Manufacturers of porcelain enamels for refrigerator linings and complete parts. Designers and builders of all types of muffle furnaces and other equipment for porcelain enameling refrigerator linings and parts.

R. A. Weaver, pres.; H. E. Ebricht, vice-pres.; D. J. Needham, secy., and H. L. Brooks, treas.

Fidelity Electric Co., 331 N. Arch St., Lancaster, Pa.

Manufacturers of FIDELITY motors for household and commercial electric refrigeration.

Chas. F. Stauffer, pres.; B. Grant Stauffer, treas. and gen. mgr.; Dr. Levi W. Horting, elec. engr.; Chas. P. Bantshof, elec. engr.

Flintlock Corp., 4461 Jefferson Ave. W., Detroit, Mich.

Manufacturers of FLINTLOCK condensers and expanders.

C. H. L. Flintermann, pres.; John Karmazin, vice-pres.; Ellis L. Larson, gen. mgr.; H. I. Phillips, sales engr.; J. E. Seiter, sales engr.; M. J. Copeland, pur. agt.; J. H. Benson, engr.; E. S. Erickson, fact. mgr.

Fowler Refrigerating Machine Co., West Grand Blvd., Detroit, Mich.

Manufacturers of the FOWLER commercial and ice cream and soda fountain electric refrigerators.

Fleming B. Fowler, chairman of the board; Elbert Fowler, vice-pres. and chief engr.; Herbert Schaeffer, secy. and treas.

Franklin Air Compressor Corp., Norristown, Pa., a division of Kulair Corp., 506 Harrison Building, 4 South 15th St., Philadelphia, Pa.

Factory, laboratory and sales office at Norristown, Pa., where all communications are to be addressed.

Manufacturers of compressors, high sides, evaporators, thermostats, other refrigerating parts, as well as complete refrigerating units, embracing such products as formerly manufactured by the Dunning Pump & Mfg. Company.

John J. Williams, pres.; W. W. Moss, vice-pres. and treas.; G. W. Gail, secy. and chief engineer; E. D. Dunning, production mgr.; H. S. Plummer, sales mgr.

Fricks Company, Waynesboro, Pa.

Manufacturers of commercial electric refrigeration machinery.

A. O. Frick, chairman of the board; Ezra Frick, pres.; J. G. Benedict, vice-pres.; D. N. Benedict, treas. and gen. mgr.; M. E. Gordon, asst. treas.; W. R. Snively, secy.; G. H. Kuhn, asst. secy.

Ed. Friedrich, 1117 E. Commerce St., San Antonio, Texas. Branch offices and show rooms, 410 S. 20th St., Birmingham; 805 Franklin Ave., Houston; 2012 Commerce St., Dallas, Tex.; 310 E. Third St., Tulsa; 627 West Main St., Oklahoma City; 1545 Highland Ave., Shreveport; 1424 Harmony Ave., New Orleans; 822 14th St., San Diego; Phoenix, Ariz.

Manufacturers of butcher coolers, freezer display counters, florist, restaurant and grocery refrigerators.

The Frigair Company, 1972-1976 Lincoln Ave., Pasadena, Calif. Factories at Los Angeles, and Inglewood, Calif.

Manufacturer of FRIGAIR household and commercial machines and machines for ice cream and soda fountains, water coolers and thermostats.

W. F. Warner, pres. gen. mgr., sales promotion mgr.; T. W. Warner, vice-pres.; M. L. Warner, secy. and pur. agt.; N. F. Hill, fact. mgr.; D. M. Warner, chief engr.

Frigidaire Corp., Dayton, Ohio. Subsidiary of General Motors Corporation.

Manufacturers of household and commercial electric refrigerators, ice cream cabinets and water coolers.

E. G. Biechler, pres.; R. D. Funkhouser, vice-pres.; C. F. Kettering, vice-pres.; H. W. Prior, gen. sales mgr.; J. A. Harlan, household sales mgr.; C. A. Corp, commercial sales mgr.; E. D. Doty, adv. mgr.; L. S. Keilholtz, chief engr.; Thos. B. Fordham, works mgr.

Frozone Corp., 700 Chestnut St., Philadelphia, Pa.

Manufacturers of FROZONE domestic and commercial electric refrigeration units.

W. J. Johnson, pres.; T. J. Hunter, secy. and treas.; W. J. Maginnis, chief eng. and works mgr.; J. F. Manley, sales mgr.

Garland Refrigerator Co., Inc., 101 Park Ave., New York, N. Y. Factory at Mt. Vernon, N. Y.

Manufacturers of GARLAND commercial electric refrigerator cabinets.

M. L. Garland, pres.; B. F. Garland, treas.; C. F. Garland, secy.

General Electric Co., Electric Refrigeration Dept., Hanna Bldg., 1400 Euclid Ave., Cleveland, Ohio. Factories at Schenectady, N. Y., and Fort Wayne, Ind.

Manufacturers of GENERAL ELECTRIC household electric refrigerators; motors for household and commercial machines.

T. K. Quinn, mgr.; P. B. Zimmerman, sales mgr.; C. E. Eveleth, works mgr.; Walter Cowl, Port Wayne works mgr.; L. R. Edwards, adv. mgr.; W. C. Noll, mgr. of adjustments and claims; A. C. Mayer, mgr. merchandising service; J. J. Kehoe, mgr. cabinets; W. J. Daily, mgr. sales promotion; G. C. Wasson, mgr. warehouse and distribution; C. G. Smith, mgr. credit and collections; H. P. Smith, auditor; W. H. Timmerman, commercial engr.; H. H. Bosworth, mgr. central station division; C. E. Roesch, asst. to sales mgr.; H. C. Mealey, asst. to the mgr.

General Necessities Corp., 1560-78 Theodore St., Detroit, Mich.

Manufacturers of ABSOLUTE FRIGERATORS for household, commercial, ice cream and soda fountain use; water coolers.

David A. Brown, pres.; E. E. Von Rosen, secy. and treas.; E. A. Wentworth, adv.; H. C. Hayes, chief engr.; H. D. Dargert, fact. mgr.; T. S. Pendergast, asst. engr. and service manager.

NOVOID CORKBOARD

For all commercial jobs you will find NOVOID Corkboard Insulation the most satisfactory insulating material for the purpose. It is convenient to use. It comes in 12"x36" and 24"x36" sheets, in 1", 1 1/2", 2", 3", and 4" thicknesses. Shipped in strong fibre containers, each containing 72 board feet. Samples on request.

Write for Catalog E-2 CORK IMPORT CORP. 345-349 W. 40th St., New York Branches in Principal Cities

Electric Refrigeration Distributors and Dealers

You need the PEERLESS line of commercial units. PEERLESS units give you a COMPLETE line, ranging from 1 to 10 tons.

Fifteen years of successful manufacturing and merchandising of ice machines are behind the PEERLESS name. Our record warrants your most exacting investigation.

WRITE OR WIRE PEERLESS ICE MACHINE CO. 515 W. 35th St. CHICAGO, ILL.

Manufacturers of commercial electric refrigeration machinery.

A. O. Frick, chairman of the board; Ezra Frick, pres.; J. G. Benedict, vice-pres.; D. N. Benedict, treas. and gen. mgr.; M. E. Gordon, asst. treas.; W. R. Snively, secy.; G. H. Kuhn, asst. secy.

Ed. Friedrich, 1117 E. Commerce St., San Antonio, Texas. Branch offices and show rooms, 410 S. 20th St., Birmingham; 805 Franklin Ave., Houston; 2012 Commerce St., Dallas, Tex.; 310 E. Third St., Tulsa; 627 West Main St., Oklahoma City; 1545 Highland Ave., Shreveport; 1424 Harmony Ave., New Orleans; 822 14th St., San Diego; Phoenix, Ariz.

Manufacturers of butcher coolers, freezer display counters, florist, restaurant and grocery refrigerators.

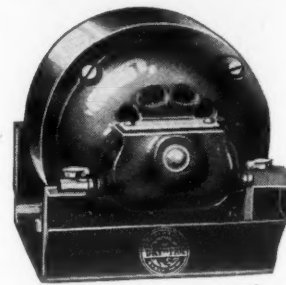
**SureCold**  
SO<sub>2</sub> Air Cooled equipment  
Commercial 1/2 to 1 h.p.  
Flooded type cooling coils  
Domestic Cabinets  
WARNER STEEL PRODUCTS CO.  
OTTAWA, KANS.  
MACHINERY BUILDERS FOR 30 YEARS

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Complete, practical Course, covering all phases of the industry. Great aid to Executives, Salesmen, Installation and Servicemen. Send for FREE Illustrated Catalog. UTILITIES ENGINEERING INSTITUTE Dept. 43, 3120 No. Clark St., Chicago

## DAY-FAN REFRIGERATION MOTOR



ELECTRIC REFRIGERATION WILL BE INTRODUCED TO A HALF MILLION NEW HOMES IN 1928

The great majority of this multitude know very little about motor repair or adjustment—don't care to know—and when the electric refrigerator is Day-Fan Motor equipped—the operation will be care-free and trouble-proof. Important to manufacturers is its low initial cost.

Sample test motor shipped to manufacturer on request.

THE DAY-FAN ELECTRIC COMPANY  
DAYTON, OHIO

## HERRICK REFRIGERATORS

New Beauty and old-time Quality combine in the HERRICK for 1928!



## Household Cabinets

Cabinets of exquisite beauty and securable in three types of lining material make the Herrick household lines of 1928 much preferred for use with any electrical refrigeration unit. Vitrolite, porcelain and white enamel linings, Triplex insulation, Forced circulation. Write for catalog No. 38.

## HERRICK COMMERCIAL REFRIGERATORS



A complete line of commercial refrigerators for hotels, restaurants, clubs, grocers, markets, cafes, delicatessens, cafeterias, florists, hospitals, institutions.

HERRICK Refrigerator Co.  
1019 CEDAR STREET  
WATERLOO, IOWA



# Electric Refrigeration Directory (Continued)

**General Refrigeration Co.,** Beloit, Wis. Factory at South Beloit, Ill.  
Manufacturers of LIPMAN automatic electric refrigerating machines for commercial applications; coils; conductors; expansion valves.  
T. E. Swords, pres.; J. R. Morash, vice-pres. and gen. mgr.; J. J. Tyndal, secy.; George O. Forbes, treas.; W. C. Moore, adv. mgr.; J. E. Churm, pur. agt.; F. E. Dennison, chief engr.

## GEUDER, PAESCHKE & FREY

(See advertisement in this issue.)  
Geuder, Paeschke & Frey Co., St. Paul Ave. and 15th St., Milwaukee, Wis.  
Manufacturers of stamped and pressed parts of all kinds.  
Chas. A. Paeschke, pres.; F. J. Frey, sec. and treas.; Chas. Paeschke, Jr., ass't. sec.; Frank Frey, Jr., ass't. treas.

**Gibson Refrigerator Company,** 515 W. Williams St., Greenville, Mich.  
Manufacturers of GIBSON cabinets for household and commercial electric refrigerators.

**Gloekler Co.,** Bernard, 1627-33 Penn. Ave., Pittsburgh, Pa.



Manufacturers of GLOEKLER cabinets for household and commercial electric refrigeration, and of commercial display cases.  
J. Edward Gloekler, pres. and treas.; Karl J. Gloekler, vice-pres. and secy.; Joseph F. Kriss, pur. agt.; and H. W. Lindsay, chief engr.

**Gurney Ball Bearing Company,** Jamestown, New York.

Manufacturers of bearings.  
Henry K. Smith, pres.; A. C. Davis, vice-pres.; J. H. Walters, secy. and treas.; H. A. Johnston, sales mgr.; S. W. Brandel, supt.

## GOODNOW & BLAKE

(See advertisement in this issue.)  
Goodnow & Blake Mfg. Co., 3840 Beaver St., Detroit, Mich.  
Manufacturers of thermostats, suction controls, high pressure cut-outs and other control devices; shaft seals and floats.  
Geo. J. Korte, pres.; A. F. Korte, vice-pres.; E. B. Goodnow, secy. and treas.; Manuel Lassen, consulting engr.

**John J. Grothe Co., Inc.,** 57 Conn. Ave., Zero Bldg., Woburn, Mass.  
Manufacturers of ZERO cabinets for electric refrigerators for commercial and ice cream and soda fountain use; water coolers; mechanical refrigerated truck bodies.  
James A. Houston, pres.; Arthur B. Mackay, vice-pres.; John E. Burke, secy. and treas.; A. B. Mackay, gen. mgr.; Joseph Robbins, fact. and service mgr.

**Gustav J. Gruendler Mfg. Co., Inc.,** 814-816 N. Broadway, St. Louis, Mo. Factory at 16th and Pine Sts., St. Louis; 124 Sidney St., St. Louis.  
Manufacturers of commercial refrigerators, freezer display counters and grocery refrigerators.

**Gurney Refrigerator Co.,** Fond du Lac, Wis.  
Manufacturers of cabinets for household and commercial electric refrigerators; also of cabinets for ice cream and soda fountain use.  
E. G. Vail, pres. and treas.; A. D. Thomsen, vice-pres.; F. A. Foster, secy.; Nicholas Wellington, chief engr.; and C. M. Nelson, gen. supt.

**Harder Refrigerator Corp.,** Cobleskill, N. Y.  
Manufacturers of KLEEN-KOLD electric refrigerator cabinets.  
E. S. Ryder, pres.; F. H. Ryder, vice-pres. and gen. mgr.; G. D. Ryder, secy.-treas. and adv. mgr.; H. L. Merrill, sales mgr.; E. C. Allen, pur. agt.; A. W. Rowley, chief engr.; G. J. Hopkins, works mgr.

**Hart & Burmeister,** Jerrold at Napoleon, San Francisco, Cal.  
Manufacturers of CALIFORNIA domestic electric refrigerators.

## HASKELITE

(See advertisement in this issue.)  
Haskelite Manufacturing Corp., 133 W. Washington St., Suite 510, Chicago, Ill. Factory at Grand Rapids, Mich.  
Manufacturers of PLYMETL household and commercial cabinets.  
George R. Meyer, pres.; James R. Fitzpatrick, secy.; Olin H. Basquin, chief engr.; Frank M. Curran, fact. mgr.

**Heintz Manufacturing Co.,** Front and Olney Sts., Philadelphia, Pa.  
Manufacturers of STEEL PREST household and commercial electric refrigeration cabinets and steel stampings.  
L. J. Heintz, pres.; R. P. Farrington, vice-pres. and treas.; F. W. Thacher, vice-pres.; A. L. Lambert, secy.; W. J. Bryan, sales mgr.; J. J. Fiechter, works mgr.; W. C. DeMaris, office mgr.

## GRAND RAPIDS BRASS

(See advertisement in this issue.)  
Grand Rapids Brass Co., Grand Rapids, Mich.  
Manufacturers of locks, hinges, corners, drip traps, knobs, handles, and screw machine parts, in any finish.

## DRINKING WATER FAUCETS

for  
Refrigerators - Water Coolers  
**Cordley & Hayes**  
1 Leonard St. New York City

## Refrigeration Engineering

Specialists in household machines, having rotary pumps.  
Reports on water cooler development  
**H. R. VAN DEVENTER, INC.**  
CONSULTING ENGINEERS  
342 Madison Avenue  
New York City

## Refrigeration Patents

Over 20 Years' Experience as a Specialist  
In Electric Refrigeration  
**H. R. Van Deventer**  
SOLICITOR OF PATENTS  
342 Madison Avenue, New York City

J. L. Murray, pres. and gen. mgr.; H. M. Bertelson, vice-pres.; Carlton Austin, sec.-treas.; Chas. Goodrich, assist. sales mgr.; Elmer Osbeck, factory supt.  
Branch offices: B. A. Hinman, 10 E. 43rd St., New York City; Ralph C. Hubert, Evansville, Ind.; G. V. Siroupe, High Point, N. C.; Otto M. Wenk, 2130 No. Kedzie Ave., Chicago; Nissen-Currier Co., San Francisco, Calif.; Nissen-Currier Co., Portland, Ore.; Nissen-Currier Co., Seattle, Wash. Foreign offices: Toronto, Ont., Canada; Mexico City, Mexico; Havana, Cuba; Sydney, Australia.

**Hale & Kilburn Co.,** 1800 Lehigh Ave., Philadelphia, Pa.  
Manufacturers of ice cream cabinets, water coolers, and steel stampings of all kinds.  
J. K. Hoffman, mgr., elect. refrig. dept.

## HERRICK REFRIGERATOR

(See advertisement in this issue.)  
Herrick Refrigerator & Cold Storage Co., Commercial Street, Waterloo, Iowa.



Manufacturers of HERRICK household and commercial refrigerators, cabinets for electric refrigeration and water cooling refrigerators.  
Nathan Northey, pres.; Edward N. Northey, vice-pres.; H. G. Northey, secy.; W. E. Ogle, treas.; C. A. LaBarre, fact. supt.

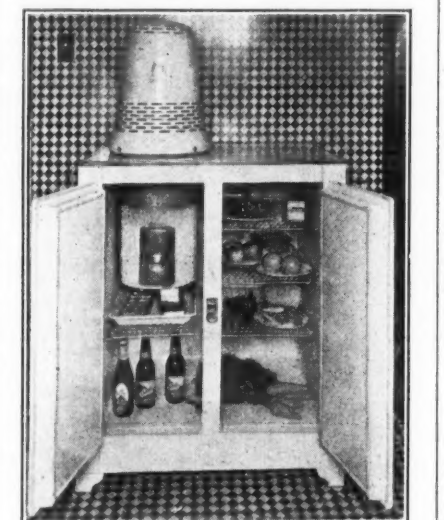
**The Hibbard Company,** 6504 Euclid Ave., Cleveland, Ohio. Factory at Parma, Ohio.  
Manufacturers of electrically refrigerated beverage cabinets.  
H. W. Hibbard, pres.; I. B. Hibbard, secy.

**C. V. Hill & Co., Inc.,** 306 Pennington Ave., Trenton, N. J. Factory branch office, 336 Broad St., Newark, N. J.

Manufacturers of complete store equipment including commercial refrigerators for the market and restaurant and a complete line of refrigerator display cases in both wood and metal.  
C. V. Hill, Jr., adv. mgr.

**The Home Products Corp.,** Jackson, Michigan.  
Manufacturers of WHITE FROST and CASTLE household electric refrigerator cabinets.  
George H. Hannum, pres.; H. C. Castle, vice-pres.; C. B. Castle, secy.-treas. and gen. mgr.; H. A. Matthews, sales mgr.; G. A. Christman, pur. agt.

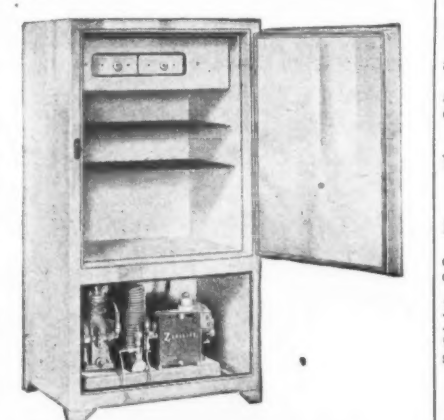
**The Hvid Ice Machine Corp.,** First National Bank Bldg., Chicago, Ill.



Manufacturers of SNOW QUEEN household electric refrigerating machines.  
Lawrence E. Abt, pres.; R. M. Hvid, vice-pres.

**Icemaster Co.,** Box 667, Haverhill, Mass. Branch office, Room 1043 Grand Central Terminal Bldg., New York City.  
Manufacturers of household and commercial electric refrigeration units, electrically refrigerated ice cream cabinets and special equipment.

**Iron Mountain Co.,** 939-1011 E. 95th St., Chicago, Ill.



Manufacturers of ZEROZONE commercial and household electric refrigerators, electric refrigeration units for ice cream, soda fountains, water coolers and other special appliances.  
C. E. Jernberg, pres. and gen. mgr.; O. H. Anderson, vice-pres. and treas.; L. C. Keely, vice-pres. in charge of sales; E. R. Lovegren, asst. sales mgr.; A. C. Moreland, sales promotion mgr.; S. G. Hawley, pur. agt.; W. E. Bihl, chief engr.; R. F. Polley, service mgr.

**Illinois Refrigerator Co.,** Morrison, Ill.  
Manufacturers of household and commercial electric refrigerator cabinets.  
Edward A. Smith, pres.; F. L. Smith, vice-pres. and gen. mgr.; Harry L. Kirberg, treas.; Humphrey C. Rendall, secy.; Arthur T. Freer, sales mgr.; Alfred W. Collins, traffic mgr.

## INCO MONEL

(See advertisement in this issue.)  
The International Nickel Co. (Inc.), 87 Wall St., New York, N. Y. Rolling mill located at Huntington, W. Va.  
Manufacturers of INCO Monel Metal sheet, strip, rod, castings, screws, bolts, rivets, etc.  
R. C. Stanley, pres.; J. F. McNamara, sales mgr. Monel Metal and Rolled Nickel Department.

**The Iroquois Electric Refrigeration Co.,** 1000 Arch St., Philadelphia, Pa. Associate of the Barber Asphalt Co. Factory at Buffalo, N. Y.  
Manufacturers of IROQUOIS household electric refrigerators.

Arthur W. Sewall, pres.; Frank Seamans and C. W. Bayliss, vice-pres.; E. R. Riter, secy.; C. W. Bayliss, sales mgr.; W. F. Hartzell, adv. mgr.; F. A. Browne, chief engr.; A. L. Bell, works mgr.

**Jack Frost Ice Machine Co., Ltd.,** 347 Sorauren Ave., Toronto, Canada.

Manufacturers of JACK FROST household and commercial refrigerators, complete units for ice cream and soda fountain use, water coolers, soft drink cabinets.

John G. O'Brien, pres.; F. Mayhew, vice-pres.; G. Argument, secy. and treas.; John C. O'Brien, general mgr.; Fred C. Baker, mgr. of sales; T. L. O'Brien, gen. supt.; W. Thornton, asst. supt. in charge of installation and service.

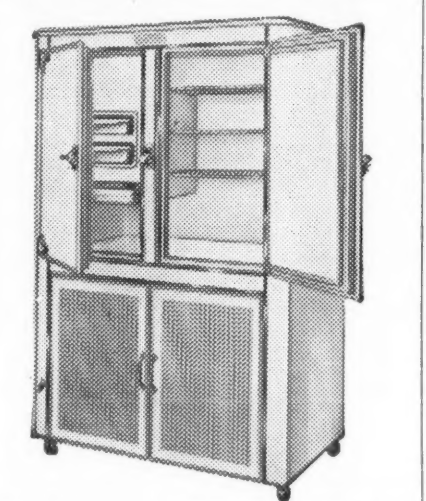
## JEWETT

(See advertisement in this issue.)  
Jewett Refrigerator Co., 2 Letchworth St., Buffalo, N. Y. Factories at Buffalo, Lackawanna, Bridgeburg, Can.

Manufacturers of JEWETT cabinets for household and commercial electric refrigerators; JEWETT square water coolers and ice makers.  
Edgar B. Jewett, pres. and treas.; H. J. Hedrick, vice-pres. in charge of Chicago office; Arthur M. Nelson, vice-pres. in charge of New York office; Fulton Brown, in charge of Boston office; C. F. Gerhardt, secy.; B. A. Simon, pur. agt.

**J. T. Manufacturing Co.,** 666 Lake Shore Drive, Chicago, Ill. Factory at Nashville, Tenn.  
Manufacturers of cabinets for household electric refrigerators.  
A. C. Jones, pres.; Jacob Teller, vice-pres. and sales manager; L. E. Stephens, secy.-treas. and sales mgr.; L. E. Stephens, secy.-treas.

**Kelvinator Corp.,** Plymouth Road, Detroit, Michigan. Factories at Detroit and Grand Rapids.  
Manufacturers of KELVINATOR electric refrigerators for household and commercial use, also ice cream and soda fountain units and cabinets and LEONARD refrigerator cabinets.  
A. H. Goss, chairman of board; C. K. Woodbridge, pres.; H. W. Burritt, B. A. MacDonald, W. D. Mercer, and H. A. Lewis, vice-presidents; M. Wiley, secy.



**Keokuk Refrigerating Co.,** Keokuk, Ia.  
Manufacturers of KEOKUK household and commercial electric refrigerators, thermostats; other control devices.  
G. E. Weissenburger, pres. and gen. mgr.; John Dillon, vice-pres.; J. O. Boyd, secy. and treas.; John Dillon, sales and adv. mgr.; Geo. M. Berryhill, pur. agt.; G. L. Weissenburger, chief eng. and asst. sales mgr.

**Keokuk Refrigerating Co.,** Keokuk, Ia.  
Manufacturers of KEOKUK household and commercial electric refrigerators, thermostats; other control devices.  
G. E. Weissenburger, pres. and gen. mgr.; John Dillon, vice-pres.; J. O. Boyd, secy. and treas.; John Dillon, sales and adv. mgr.; Geo. M. Berryhill, pur. agt.; G. L. Weissenburger, chief eng. and asst. sales mgr.

## KEROTEST

(See advertisement in this issue.)  
Kerotest Manufacturing Co., 2525 Liberty Ave., Pittsburgh, Pa.  
Manufacturers of forged brass cylinder and shut-off valves and fittings.  
Edward G. Mueller, pres.; R. W. Mueller, vice-pres.; W. G. Swancy, secy.; and John S. Forbes, treas.

**Keystone Refrigerating Corp.,** Beaver Falls, Pa.  
Manufacturers of KEYSTONE commercial refrigerating units.  
W. B. Atwood, pres. and gen. mgr.; J. Blair Elder, vice-pres. in charge of sales; G. W. Kipatrick, secy. and treas.; D. W. Campbell, asst. secy. and asst. treas.; J. W. Cannon, sales eng.; H. S. Michael, chief eng.; C. O. Duevel, research eng.; H. Nielsen, asst. eng.

## KULAIR

(See advertisement in this issue.)  
Kulair Corp., Norristown, Pa. (Successors to Dunning Pump & Mfg. Co.).  
Manufacturers of condensers and expanders, and thermostats.  
Phillips F. Lee, pres.; W. W. Moss, vice-pres. and treas.; Frank C. Brady, secy.; G. W. Gail, eng.

**La Crosse Refrigerator Corp.,** La Crosse, Wis.  
Manufacturers of LORRAINE cabinets.

**The Lamson Co.,** subsidiary of American Pneumatic Service Co., Syracuse, New York.  
Manufacturers of ICE MAID household, ice cream cabinet and commercial machines for beverage vending machines—the latter a specialty.  
Merton L. Emerson, pres. and gen. mgr.; John S. Ogg, vice-pres. and treas.; H. W. Alexander, gen. mgr. Ice Maid division; J. T. Cowley, chief eng.; H. F. Bruggmann, fact. supt.; and J. K. Quinn, pur. agt.

**Leachwood Co.,** Janesville, Wis.  
Manufacturers of corrugated metal bellows of seamless type; compressor seals, thermostatic controls, pressure controls, high pressure cut outs, expansion valves, float valves, and floats.  
P. J. E. Wood, pres.; W. C. Lagerman, vice-pres. and fact. mgr.; E. J. Leach, secy. and treas., chief eng.

**Leland Electric Company,** Dayton, Ohio.  
Manufacturers of motors for domestic and commercial electric refrigerators.  
George H. Leland, pres.; E. B. George, sales mgr.; W. E. Kraft, treas.

**John Lees Co.,** 241 West Georgia St., Indianapolis, Ind.  
Manufacturers of refrigerator hardware (angles, trim and corners).  
Harry Murphy, pres.; C. R. Shaffer, vice-pres. and sales mgr.; A. F. Westlund, vice-pres. and pur. agt.; W. A. Keller, secy. and treas.

**Leonard Refrigerator Company,** Grand Rapids, Mich., division of the Electric Refrigeration Corp.  
Manufacturers of LEONARD CLEANABLE cabinets for household and commercial use.  
H. W. Burritt, pres.; A. H. Jaeger, sales mgr.; C. W. Kirkpatrick, asst. secy.-treas.; Earl Lines, adv. mgr.; A. J. Mitchell, pur. agt.; H. L. Pope, chief eng.

**Ligoni Refrigerator Co.,** Ligonier, Ind.  
Manufacturers of LIGONIER household electric refrigerators.  
Ligoni Refrigerator Co., Ligonier, Ind.

**Ligoni Refrigerator Co.,** Ligonier, Ind.  
Manufacturers of LIGONIER household electric refrigerators.  
Ligoni Refrigerator Co., Ligonier, Ind.

## LIGONIER

(See advertisement in this issue.)  
Ligoni Refrigerator Co., Ligonier, Ind.



Manufacturers of refrigerators, coolers and refrigerator display cases for all commercial purposes.

**Lindsay, Hyde & Co.,** 2130 E. York St., Philadelphia, Pa.  
Manufacturers of LIHYCO electric refrigerators for household use; tubing.  
Wm. Geible, sales mgr.; Wm. J. Maginnis, chief eng.; John Lindsay, works mgr.

**Louisville Refrigerator Corporation,** 4400 Louisville Ave., Louisville, Ky. Factory located at Highland Park, Ky.

Manufacturers of WHITE SEAL steel clad cabinets for household use and electric refrigerators for multiple hook-up only.  
H. S. Milton, pres. and secy.; H. P. Dowling, treas.; Geo. W. Grove, sales mgr.

## LUSE-STEVENSON

(See advertisement in this issue.)  
Luse-Stevenson Co., 307 N. Michigan Ave., Chicago, Ill.  
Manufacturers of RELIABLE corkboard insulation.

**L. H. Mace & Co.,** 55 East 150th St., New York, N. Y.

Manufacturers of MACE household electric refrigerator cabinets.  
Samuel Steinfeld, pres.; Lew Hutzler, treas.; Wm. Lurie, secy.; Ralph Redell, gen. mgr.

**Maine Mfg. Co.,** Nashua, N. H. Branch offices, 100 Lexington Ave., New York City; 27 Haymarket Square, Boston, Mass.; 1807 Polk St.; Alexandria La.; American Furniture Mart, Chicago, Ill.; 112 Market St., San Francisco, Cal.

Manufacturers of WHITE MOUNTAIN Refrigerators, especially adapted for electric refrigeration.  
Philip E. Stevens, pres.; I. Blaine Stevens, asst. treas.

**Marathon Electric Mfg. Co.,** Wausau, Wis.

Manufacturers of MARATHON "OK" motors for electric refrigerators.  
J. S. Alexander, pres.; A. P. Woodson, vice-pres.; L. H. Wheeler, treas.; L. H. Wheeler, gen. mgr.; J. W. Kaps, sales and adv. mgr.; W. N. Baldwin, pur. agt.; R. O. Gilburg, supt.

**Master Electric Company,** Linden and Master Aves., Dayton, O.  
Manufacturers of MASTER motors for household and commercial machines.  
E. P. Larsh, pres.; W. R. Clements, vice-pres.; J. O. Wortman, secy.; H. E. Kline, treas.

## McCAY

(See advertisement in this issue.)  
McCay Refrigerator Sales Corp., Kendallville, Indiana.

Manufacturers of McCay household and commercial electric refrigerator cabinets.  
E. E. McCay, pres. and gen. mgr.; H. McCay, vice-pres.; H. M. Stewart, vice-pres. and gen. sales mgr.; J. W. Hart, secy.; R. E. Davis, treas.; R. S. Moses, asst. sales mgr.; R. J. Behwinkel, publicity mgr.; C. O. Ullen, gen. fact. supt.; R. J. Misselhorn, central sales mgr.; M. A. Drumheller, western sales mgr.; W. R. Hawkins, eastern sales mgr.; V. C. Knight, southern sales mgr.

## McCORD

(See advertisement in this issue.)  
McCord Radiator & Mfg. Co., East Grand Blvd. and Ropelle St., Detroit, Mich. Factories at Detroit, Plymouth, Ind., and Walkerville, Ont.

Manufacturers of tubing, condensers and expanders, enameling, gaskets, diaphragms, stampings (steel, brass and copper).  
A. C. McCord, pres.; C. R. Hammer, vice-pres. and treas.; Morrill Dunn, vice-pres. in charge of sales; P. L. Barter, vice-pres. in charge of sales; E. O. Bodkin, adv. mgr.; J. Cooper, pur. agt.; J. Harris, chief eng.; R. M. Hyde, eng.; C. W. Owsen, vice-pres. and works mgr.; F. W. Hicks, fact. mgr.

**McDougall Co.,** Frankfort, Ind.

Manufacturers of domestic refrigerators for use with either ice or electric refrigeration.  
J. M. Coulter, domestic science division.

**Mechana-Kold Corporation,** Bay Shore, New York.

Manufacturers of household refrigerating machines, small commercial machines for display counter use, and complete line of metal cabinets with machines in bases; also thermostats and freezing tanks.

**Mechanical Mfg. Co.,** Union Stock Yards, Chicago, Ill. Eastern Office, 30 Church St., New York.

Manufacturers of RED JACK metallic packing.

**The Merchant & Evans Co.,** 2035 Washington Ave., Philadelphia, Pa. Factories at Lancaster and Philadelphia, Pa.

Manufacturers of M. & E. household and commercial electric refrigerators.  
Powell Evans, pres.; Thomas Evans, secy. and gen. mgr.; M. P. Stoney, production mgr.; S. J. Benn, chief refrigeration eng.

**Mercoid Corp.,** 564 W. Adams St., Chicago, Ill.

Manufacturers of MERCROID controls and thermostats.  
L. H. Van Ness, pres.; J. W. Owens, vice-pres., Chicago office; N. J. Allaben, vice-pres., New York office; M. Howard, vice-pres., San Francisco office; W. C. Capen, vice-pres., St. Louis office; E. I. Holland, secretary; F. W. Peterson, treas.

**Metz Products Corp.,** 3051 Rosslyn St., Los Angeles, Calif.

Manufacturers of METZ superinsulated cabinets for household electric refrigerators.  
Walter Metz, pres.; Edwin H. Metz, secy.-treas.

**Michigan Refrigeration Co., Inc.,** 1600 Monroe Ave., Grand Rapids, Mich.

Manufacturers of EL-FRIG-ETTE household electric refrigerator.

Joseph Renihan, pres.; V. I. Cilley, secy.-treas.; M. D. Greene, production mgr.

**Milburn Refrigerator Co.,** Kalamazoo, Mich.

Manufacturers of coolers, refrigerators, refrigerator counters.  
B. J. Milburn, pres. and sales mgr.; H. A. Crawford, treas.

## MOTORS METAL

(See advertisement in this issue.)  
Motors Metal Manufacturing Co., 3036 Milford Ave., Detroit, Mich.

Manufacturers of ice cream cabinets complete ready for installation in freezing units; unassembled stampings for ice cream cabinets; special cabinets for milk coolers; bottle coolers; metal guards to cover freezing units; angle iron bases on which to mount them; sheet metal panels—inside and outside for household refrigerators.  
Robert R. McFath, pres.; George D. Shanahan, gen. mgr.; Nelson C. Johnson, secy. and treas.; Ferris B. Fick, gen. sales mgr.; R. M. Halsted, asst. to gen. sales mgr.; Geo. S. Burke, asst. sales mgr.; Vincent Corrado, chief engr.; R. H. Hall, pur. agt.

**Moto Meter Co., Inc.,** Wilbur Ave., Long Island City, N. Y.



Manufacturers of temperature recording instruments.

## MUELLER BRASS

(See advertisement in this issue.)  
Mueller Brass Co., 1925 Lapeer Ave., Port Huron, Mich.

Manufacturers of forged refrigerator valves and fittings, brass and copper forgings, screw machine products, brass and copper rod and tubing.  
O. B. Mueller, pres. and gen. mgr.; F. L. Riggins, secy. and sales mgr.; R. W. Peden, treas.; Robert Mueller, vice-pres. (Decatur, Ill.); Reuben Levine, adv. mgr.; H. A. McDermott, pur. agt.; C. A. Hill, chief eng.; D. E. Lindquist, supt.

**The National Copper & Smelting Co.,** 12129 Euclid Ave., Cleveland, Ohio. Factory at 1895 Colman Road, Cleveland.

Manufacturers of brass and copper seamless tubing.  
H. L. Smith, pres.; H. F. Taylor, vice-pres.; Homer B. Smith, secy.; C. L. Smith, treas.; H. B. Smith, gen. mgr.; George Staffeld, fact. mgr.

**Narragansett Machine Co.,** Vale St., Pawtucket, R. I.

Manufacturers of CHILRITE electric refrigerators for household use.  
A. J. Thornley, pres.; Albert E. Thornley, vice-pres.; C. A. Bryant, adv. mgr.

**National Refrigerating Co.,** branch of Winchester Repeating Arms Co., 125 Munson St., New Haven, Conn.

Manufacturers of ICE-O-LATOR household and commercial electric (and gas operated) refrigerators.  
W. A. Tobler, pres.; L. H. Thompson, vice-pres.; treas.; Edwin Pugsley, vice-pres.; F. H. Knapp, vice-pres. and gen. mgr.; Henry Brewer, secy.; A. E. Hodgson, asst. treas.; L. W. Crenshaw, asst. secy.; G. W. Keller, sales mgr.; John A. Lunn, sales eng.; Dr. W. R. Hainsworth, refrigeration eng.; C. S. Hutt, adv. mgr.; George H. Reama, works mgr.

**C. Nelson Manufacturing Co.,** 2300 Division St., St. Louis, Mo.

Manufacturers of electrically refrigerated ice cream cabinets, water coolers, and beverage cabinets.  
Charles Nelson, pres.; W. U. Nelson, vice-pres.; James Nelson, secy.-treas.

**F. W. Niebling & Company,** 408 Elm St., Cincinnati, Ohio.

Manufacturers of refrigerating machinery, compressors, plate valves for compressors.  
F. W. Niebling, pres.

**Norge Corp.,** 670 East Woodbridge St., Detroit, Mich.



Manufacturers of NORGE household electric refrigerator units.

E. E. McCay, chairman of the board; Howard E. Blood, pres. and gen. mgr.; W. C. Rands, vice-pres.; W. C. Rands, Jr., secy.-treas.; R. E. Davis, asst. secy. and treas.; C. D. Donovan, asst. gen. mgr.; A. E. Bottenfield, sales mgr.; R. G. Nelson, chief eng.

**Northern Maine Plywood Co.,** Statler Bldg., Boston, Mass.

Manufacturers of built-up box shooks.  
T. R. Winchell, pres.; S. J. Antworth, vice-pres.; Allen Quinby, treas.

## NORTHEY

(See advertisement in this issue.)  
Northey Manufacturing Co., Park Ave. and Bluff St., Waterloo, Iowa.

Manufacturers of NORTHEY water coolers, cold storage rooms, commercial cooling rooms, chests, fish boxes, refrigerator for every purpose, any style, shape or insulation.  
Fred L. Northey, pres. and treas.; F. E. Northey, vice-pres.; V. N. Howe, secy.; Hugh McCartney, gen. sales mgr.

**North Star Refrigerator Company,** Chattanooga, Tenn.

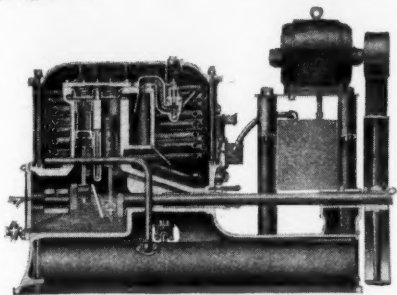
Manufacturers of cabinets for household use.  
G. C. Raoul, pres.; E. Y. Chapin, vice-pres.; H. C. Arnold, treas.; R. T. Frazier, sales and adv. mgr.; J. M. Alexander, pur. agt.; V. D. Rider, works mgr.



## Electric Refrigeration Directory (Continued)

## PEERLESS

(See advertisement in this issue.)  
Peerless Ice Machine Co., 515 W. 35th St., Chicago, Ill.



Manufacturers of automatic refrigerating machines, water cooling plants, water regulators, and pressure controls. Brine circulating and methyl chloride direct expansion refrigerating systems for apartment buildings.

Penn Electric Switch Co., 306 Twelfth St., Des Moines, Iowa.

Manufacturers of thermostats and other control devices, high and low pressure safety switches, pressure-vacuum operated control switches, water regulators.

Perfection Cooler Co., Michigan City, Ind. Manufacturers of PERFECTION hygienic water coolers.  
Atwood L. Boggs, pres. and treas.; W. K. Greenbaum, vice-pres. and sales mgr.; R. M. Nicholson, assistant treas.; Clarence A. Boggs, secy.; H. C. Sullivan, assistant secy.; F. W. Cook, supt.

The Phoenix Ice Machine Company, 2711 Church Ave., Cleveland, Ohio.  
Manufacturers of PHOENIX refrigerating machinery for commercial use.  
A. Novotny, vice-pres.; H. H. Jeck, secy.; H. E. Bollinger, treas. and mgr.; R. H. Whipple, sales mgr.; G. Vance Rupp, chief engr.; Fred Mayer, fact. supt.

Plymetl (See Haskelite Mfg. Co.)

Plympton Refrigerator Company, Inc., Ellwood City, Pa.

Manufacturers of Plympton directed air flow refrigerating sections for freezer cases, top counter and small cooler installations in connection with any refrigerating unit.

T. A. Daley, pres.; H. B. Beighley, secy.-treas. and gen. mgr.; H. L. Semans, chief engr.

Polaraire Electric Refrigerator Co., 1610-12 North St., Philadelphia, Pa.

Manufacturers of POLARAIRE household electric refrigerators, commercial machines, motors, tubing, condensers and expanders, pressure controls.

L. V. Gilliam, pres.; Samuel Goodhart, vice-pres.; R. M. Cook, secy.-treas.; Chas. J. H. Freeth, sales mgr.; Earl Perkins, service mgr.

Polaris Electric Refrigerator Co., 417 First St., Logansport, Ind.

Manufacturers of POLARIS electric refrigeration machines for household and commercial use; electric refrigeration equipment for ice cream and soda fountain use.

C. H. Canode, pres.; J. F. McManus, vice-pres.; C. W. Church, secy.; H. A. Kraut, treas.; John Dubrovin, chief engr.; W. J. Ball, asst. mgr.

Progress Refrigerator Co., branch of Louisville Tin & Stove Co., 621 W. Main St., Louisville, Ky.

Manufacturers of PROGRESS electric refrigerator cabinets.

W. L. Hollis, pres.; C. C. Cloud, vice-pres.; C. V. Edmonds, secy.-treas.

Pure Cork Products Company, Inc., Suite 600, Shubert Building, 250 South Broad Street, Philadelphia, Pa. Factories in Spain.

Manufacturers of pure sheet corkboard and cold temperature insulation accessories.

Leon Lewis, pres.; Morris Volsman, vice-pres.; William Miller, secy. and treas.; and H. T. Hellbrueck, gen. mgr.

Puro Filter Corp. of America, 436 Lafayette St., New York, N. Y.

Mortimer H. Sloss, treasurer.

Ranney Refrigerator Company, Greenville, Mich.

Manufacturers of cabinets for household and commercial use.

E. W. Ranney, pres.; L. W. Ranney, vice-pres. and secy.; H. N. Clement, treas.; S. C. Cutler, Chicago mgr.

Rauf Manufacturing Co., Bogota, N. J. Manufacturers of ALPINE domestic electric refrigerators.

Manufacturers of RICE household and commercial refrigerator units.

Renfrew Refrigerator Co., Ltd., Renfrew, Ont., Can. Branch office, 206 Victoria St., Toronto.

Manufacturers of BARNET and RENFREW refrigerators for either ice or electric refrigeration.

W. A. Black, secy. and treas.

Reol Refrigerator Co., Hillen and Front Sts., Baltimore, Md. Subsidiary of Ottenheimer Bros.

Manufacturers of REOL cabinets for household and commercial electric refrigerators; illuminated refrigerator display cases.

REX

(See advertisement in this issue.)  
Rex Manufacturing Co., Western Ave., Connersville, Ind.



Manufacturers of REX household and commercial electric refrigerator cabinets.

Charles C. Hull, pres.; M. Lair Hull, vice-pres.; James M. Heron, secy.-treas.; Jos. T. McKinney, adv. mgr.; W. O. Hull, pur. agt.; M. R. Hull, fact. mgr.; Edgar Myers, sales mgr.; C. T. Backus, traffic mgr.

Rhineland

(See advertisement in this issue.)  
Rhineland Refrigerator Company, Rhineland, Wis.

Manufacturers of AIRTITE cabinets for household and commercial electric refrigerators. R. A. Riek, gen. mgr.

Rice Products, Inc., 100 East 42nd St., New York City, and 315 Beaubien St., Detroit, Mich.  
I. L. Rice, Jr., pres.; T. E. Carpenter, vice-pres. and gen. mgr.; Julian Rice, secy.; James H. Frazier, adv. mgr.; Frank R. West, chief engr.  
J. Raufen, pres.; J. E. McCarty, treas.

The Roessler & Hasslacher Chemical Co., 700 Sixth Avenue, New York City. Factories at Niagara Falls, N. Y., Perth Amboy, N. J., and St. Albans, Vt.

Manufacturers of Artic (Methyl Chloride) Ethyl Chloride; chemicals, minerals, oxides for ceramic purposes and electro-tinning chemicals.

W. A. Hamann, president; H. R. Carveth, first vice-pres.; P. Schleussner, second vice-pres. and secy.; Albert Frankel, treas.; Milton Kutz, mgr. of sales; T. Coyle, service engr.

ROME

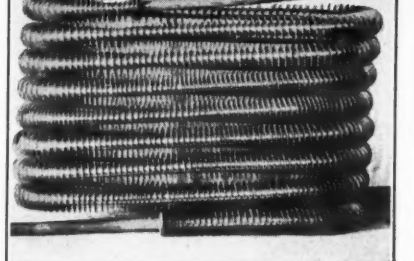
(See advertisement in this issue.)  
Rome Manufacturing Co., Railroad St., Rome, N. Y.

Manufacturers of ROME commercial electric refrigerating machinery.

P. C. Thomas, pres.; Barton Haselton, vice-pres.; E. L. Spriggs, vice-pres.; C. P. Drake, secy.-treas.; P. C. Thomas, gen. mgr.; C. P. Drake, sales mgr.; W. P. Davis, sales promotion and service mgr.; James Warren, works mgr.; C. A. Xardell, chief engr.

ROME-TURNEY

(See advertisement in this issue.)  
The Rome-Turney Radiator Company, Rome, New York.



Manufacturers of HELICALFIN condenser tubes, refrigeration condensers, stampings of copper and brass, trays, grids, liquid receivers, brine tanks, etc.

W. L. Lynch, pres. and treas.; J. J. Boylan, secy.

RUSS

(See advertisement in this issue.)  
The Russ Manufacturing Co., W. 58th and Walworth Ave., Cleveland, Ohio.



Manufacturers of BILT-RITE electrically refrigerated soda fountains, water coolers, and carbonators.

W. H. Du Ross, gen. mgr.; W. A. Schulte, gen. sales mgr.; M. E. Ewing, director of sales (department of liquid-cooling); D. C. Seitz, chief engr.

Sanderson-Harold Co., Ltd., Paris, Canada.

Manufacturers of cork insulated refrigerators for household, apartment and commercial use.

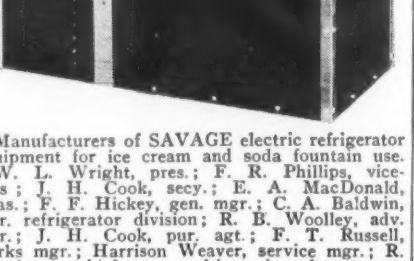
E. M. Harold, secy.-treas.

Sanitary Refrigerator Co., Oak Place, Fond du Lac, Wis.

Manufacturers of SANITARY electric refrigerators for household use.

SAVAGE

(See advertisement in this issue.)  
Savage Arms Corp., Turner St., Utica, N. Y.



Manufacturers of SAVAGE electric refrigerator equipment for ice cream and soda fountain use.

W. L. Wright, pres.; F. R. Phillips, vice-pres.; J. H. Cook, secy.; E. A. MacDonald, treas.; F. F. Hickey, gen. mgr.; C. A. Baldwin, mgr. refrigerator division; R. B. Woolley, adv. mgr.; J. H. Cook, pur. agt.; F. T. Russell, works mgr.; Harrison Weaver, service mgr.; R. W. Ayres, chief engr. refrigeration department.

SAVORY

(See advertisement in this issue.)  
Savory, Inc., 90 Alabama St., Buffalo, N. Y. Branch offices: Savory, Inc., 1500 Southwestern Ave., Chicago, Ill.; The Republic Metalware Co., 254 36th St., Brooklyn, N. Y.

Manufacturers of refrigerators for use with either ice or electric refrigeration.

George R. LeSavage, pres. and gen. mgr.; W. H. Campbell, mgr. specialties div.

SCHMIDT

(See advertisement in this issue.)  
The C. Schmidt Co., John and Livingston streets, Cincinnati, Ohio.

Builders and designers of refrigerators, cold storage, office and store fixtures.

J. H. Ahrens, pres.; H. C. Ahrens, first vice-pres.; A. E. Schmidt, second vice-pres.; E. J. Ahrens, secy.; J. A. Geiser, treas.

Fred Schmidgall & Son, 3089-91 Colerain Ave., Cincinnati, Ohio.

Manufacturers of ROYAL and AUTOMATIC refrigerator door fasteners.

SEGER

(See advertisement in this issue.)  
Seeger Refrigerator Company, Arcade-Wells Sts., St. Paul, Minn.

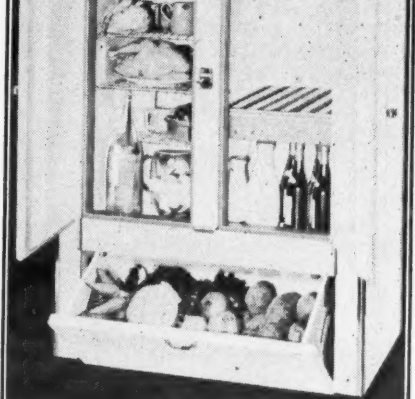
Manufacturers of SEEGER refrigerator cabinets for household and commercial use.

John A. Seeger, pres.; Walter G. Seeger, vice-pres.; G. R. Seeger, secy.-treas.; John J. Leonard, sales mgr.; S. G. Greve, adv. mgr.; R. S. Ahrens, chief engr.; G. R. Seeger, works mgr.; T. LaVelle, supt.; Harry H. Webber, service mgr.; R. A. Calton, production mgr.

SERVEL

(See advertisement in this issue.)  
Servel Sales, Inc., Executive offices, 51 E. 42nd Street, New York City, N. Y. Sales.

Advertising Offices and Factory, Evansville, Ind. Branch offices, New York, Chicago, Denver, Dallas, Los Angeles, Oakland and Seattle.



Subsidiary of Servel, Inc., Evansville, Ind., manufacturers of SERVIEL electric refrigeration units for household, commercial ice cream and soda fountain uses and water coolers. Also manufacturers of ELECTROLUX absorption type refrigerating units for domestic and household uses.

Frank E. Smith, pres.; W. F. Thatcher, vice-pres.; D. L. Adkins, secy.; F. O. Cummings, comptroller; H. W. Foulds, gen. sales mgr.; C. A. Miller, gen. service mgr.; J. M. Bickel, adv. mgr.

Sherer-Gillett Co., 1701-09 S. Clark St., Chicago, Ill. Factories at Marshall, Mich.; Herkimer, N. Y., and Guelph, Ontario.

Manufacturers of freezer display and storage cases.

S. J. Sherer, pres.; R. P. Sherer, vice-pres.; Edw. Cohn, secy.-treas.; W. R. Featherstone, sales mgr.; W. T. Sherer, production mgr.

Smithfield Refrigerator Co., 63 Charterhouse St., London, Eng.

Manufacturers of SMITHFIELD refrigerators, portable sectional cabinets for electric refrigeration, portable cold rooms for electric refrigeration, door hinges and fasteners.

Socold Refrigerating Corp., 19 Stewart St., Lynn, Mass. Factories at Lynn and Walpole, Mass.

Manufacturers of SOCOLD household electric refrigerators, pumps and compressors.

Louis M. Atherton, pres.; Arthur F. Bent, vice-pres.; Charles H. Nevins, secy. and treas.; Roy H. Booth, sales and adv. mgr.; Clem M. Batchelder, pur. agt.; Arthur C. MacIntosh, chief engr.; Clifford E. Porter, service mgr.; Henry E. Ferris, works mgr.

Southern Soda Fountain Company, 12 East Lombard Street, Baltimore, Md.

Manufacturers of SOUTHERN electrically refrigerated soda fountains.

F. Leif Eareckson, pres. and treas.; C. C. Drain, secy.

Standard Steel and Bearings Co., Plainville, Conn.

Manufacturers of SRB Ball Bearings.

Henry K. Smith, pres.; A. C. Davis, vice-pres.; J. H. Walters, secy. and treas.; W. H. Hill, sales mgr.; J. E. Melson, supt.

The Stanley Knight Co., 218 West Superior Street, Chicago.

Manufacturers of electrically refrigerated soda fountains.

Stanley H. Knight, pres.; Leslie Arnett, sales mgr.

Steelrest (See Heintz Mfg. Co.)

Strom Bearings Co., 4535 Palmer St., Chicago, Ill.

Manufacturers of ball bearings.

Henry K. Smith, pres.; A. C. Davis, vice-pres.; J. H. Walters, sec. and treas.; M. E. Monk, sales mgr.; J. Disk, supt.

Stow Mfg. Co., Inc., 443 State St., Binghamton, N. Y.

Manufacturers of motors for commercial electric refrigerator machines, grinders, flexible shafts and electric tools with metal working attachments for installation and repair work.

C. F. Hotchkiss, pres.; D. Walker Wear, vice-pres. and treas.; C. E. Hotchkiss, secy.; D. Walker Wear, gen. mgr.; Jas. P. Dickinson, fact. mgr.

Superior Iceless Refrigerator, Inc., Canton, O.

Manufacturers of SUPERIOR household, commercial, ice cream and soda fountain electric refrigerators, water coolers.

Chas. A. Kolp, pres.; Edward L. Frantz, executive vice-pres.; Frank A. Zink, treas.; H. B. MacAlpine, gen. sales director; George Lee Miller, works mgr.; J. E. Massey, production mgr.; C. J. Ossege, pur. agt.; Export Department—Superior Iceless Refrigerator, Inc., 149 Broadway, New York City, R. M. Sitterley, mgr.

Surecold (See Warner Steel Products Co.)

The Triumph Ice Machine Co., branch of The Triumph Electric Corp., 110 E. 70th St., Cincinnati, Ohio.

Manufacturers of TRIUMPH commercial, household, ice cream and soda fountain electric refrigerating machines, water coolers; motors for commercial machines; pumps and compressors; condensers and expanders; oil interceptors; ammonia condensers; receivers; brine coolers and ammonia fittings.

J. C. Hobart, pres.; E. W. Hobart, secy.; G. P. Hunt, treas.; J. C. Hobart, M. L. Block, pur. agt.; J. O. Schultz, gen. mgr.; J. O. Schultz, sales mgr.; chief engr.; J. L. McClure, works mgr.

C. J. Tagliabue Manufacturing Company, 18 to 88 33rd St., Brooklyn, N. Y. Factories at Brooklyn, N. Y., and Cleveland, Ohio.

Manufacturers of SNAPON automatic controllers for refrigerator thermostats; recording dial, industrial, and laboratory types of thermometers; air-operated, steam-operated, electric contact and other automatic controllers.

Cary D. Waters, pres.; Lawrence C. Irwin, vice-pres. and gen. mgr.; Miss E. C. Boettcher, secy.-treas.; Harvey D. Cooke, sales mgr.; Manoel F. Behar, adv. mgr.; Henry J. Nichols, pur. agt.; Victor Wichum, chief engr.; H. A. Birdsall, works mgr.; and Henry Hull, fact. mgr.

United States Gauge Co., 525 Guardian Bldg., Cleveland, Ohio.

Manufacturers of pressure and vacuum gauges.

U. S. MINERAL WOOL

United States Mineral Wool Co., 280 Madison Ave., at 40th St., New York City.

Manufacturers of MINERAL WOOL insulation.

James D. Hurd, pres.; Charles A. Gillham, vice-pres.; G. S. Beith, treas.; Henry Franz, secy.

United Wire and Supply Corporation, Auburn, N. J.

Manufacturers of return bends for condenser units, coiled tubing, and silver solder.

Universal Cooler Corp., 18th and Howard Sts., Detroit, Mich.

Manufacturers of UNIVERSAL COOLER electric refrigeration units for household, commercial, ice cream and soda fountain uses.

Curtis G. Dunham, pres.; Ford Ballantyne, vice-pres.; G. M. Johnston, vice-pres. and gen. mgr.; Albert H. Meinke, secy.-treas.; H. R. Christensen, compt.; Patterson Farmer, con. engr.; Harry Thompson, chief engr.

United Cork Companies, Grant Ave., Lyndhurst, N. J.

Manufacturers of CRESCENT corkboard insulation.

Edward Bose, pres.; Edwin J. Ward, secy.; Peter Binzel, Jr., treas.; L. T. Sibley, sales promotion mgr.; Q. J. Schwarz, supt.

Valerius Corp., Jefferson, Wis.

T. L. Valerius, pres.; N. J. Braun, vice-pres.

Manufacturers of ICE-O-MATIC soda fountain cabinets, luncheonettes and commissary refrigerators.

P. J. Hayes, secy.; O. Roessler, treas.; L. A. Forsyth, gen. sales mgr.; James Lloyd, ser. mgr.; K. P. Lewis, eastern sales mgr., 55 West 42nd St., New York City; Wm. Pietsch, Milwaukee sales mgr., 458 Jefferson St., Milwaukee, Wis.; W. F. E Levin, 1030 Post St., San Francisco, Calif.

VIRGINIA SMELTING

(See advertisement in this issue.)  
Virginia Smelting Co., West Norfolk, Va.

Manufacturers of chemical, extra dry ESOTOOL sulphur dioxide (anhydrous).

W. E. C. Eustis, president; A. H. Eustis, vice-pres.; F. A. Eustis, secy.; C. W. Johnston, gen. mgr.

WAGNER ELECTRIC

(See advertisement in this issue.)  
Wagner Electric Corp., 6400 Plymouth Ave., S. Louis, Mo.

Manufacturers of WAGNER motors for household and commercial electric refrigerators.

Branch offices located in Atlanta, Ga.; Baltimore, Md.; Boston, Mass.; Buffalo, N. Y.; Chicago, Ill.; Cincinnati, Ohio; Cleveland, Ohio; Dayton, Ohio; Dallas, Texas; Denver, Colo.; Detroit, Mich.; Houston, Texas; Indianapolis, Ind.; Kansas City, Mo.; Los Angeles, Calif.; Memphis, Tenn.; Milwaukee, Wis.; Minneapolis, Minn.; Montreal, Canada; New York City, N. Y.; Omaha, Neb.; Philadelphia, Pa.; Pittsburgh, Pa.; Portland, Ore.; Rochester, N. Y.; Salt Lake City, Utah; San Francisco, Calif.; Seattle, Wash.; St. Louis, Mo.; Springfield, Mass.; Toledo, Ohio; Toronto, Canada.

WARNER STEEL

Warner Steel Products Co., Ottawa, Kan.

Manufacturers of SURECOLD household and commercial electric refrigerators, water coolers, display counters, compressor units, and cooling coils.

C. E. Warner, pres.; A. L. Kitzelman, vice-pres.; E. L. Warner, secy. and gen. mgr.; W. H. Warner, treas.; G. E. Freeman, sales mgr.; J. W. Cook, adv. mgr.; H. K. Pinkerton, chief of engineering; W. G. Judd, mgr. of production; W. R. Jones, Kansas City branch mgr.; C. C. Shubert, Pittsburgh branch mgr.; J. W. Turner, Pueblo branch mgr.

The Warren Co., 905 Third St. S. E., Atlanta, Ga.

Manufacturers of commercial refrigerator shelves and counters.

J. D. Harris, secy. and treas.

WAYNE

(See advertisement in this issue.)  
Wayne Company, Fort Wayne, Indiana.

Manufacturers of electric refrigerators for household use.

Wm. M. Griffin, pres.; B. F. Geyer, gen. mgr.; E. A. Zern, treas.; C. G. Guild, secy.; A. D. Carriger, vice-pres. and director of sales; W. F. Brant, vice-pres. in charge of production; F. Andrews, refrigerator eng.; O. W. Barrett, pur. agt.; F. E. Mills, sales mgr.; L. A. Clark, asst. sales mgr. in charge of sales promotion; A. W. Clark, district mgr., Boston; C. F. Lealand, district mgr., New York; R. A. Dempsey, district mgr., Philadelphia; G. A. Rodman, district mgr., San Francisco; H. A. Adams, district mgr., Chicago.

Western Automatic Machine Screw Co., Elyria, Ohio.

Manufacturers of screw machine products for use in the manufacture and assembly of electric refrigerators, standard cap and set screws, semi-finished nuts, studs and taper pins.

B. C. Franklin, vice-pres. and gen. mgr.; F. H. Bryant, secy.; C. H. Smith, treas.; R. D. Oldfield, sales mgr.; F. H. Bryant, pur. agt.

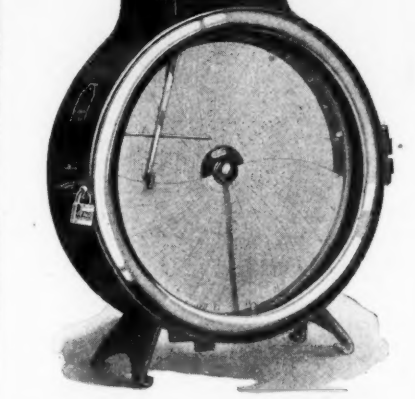
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Manufacturers of motors for commercial machines.

C. D. Kester, Synchronous motor section, motor apparatus sales.

WELSBACH

(See advertisement in this issue.)  
Welsbach Co., Gloucester, N. J. Subsidiary of United Gas Improvement Co.



Manufacturers of SNAPON automatic controllers for refrigerator thermostats; recording dial, industrial, and laboratory types of thermometers; air-operated, steam-operated, electric contact and other automatic controllers.

Cary D. Waters, pres.; Lawrence C. Irwin, vice-pres. and gen. mgr.; Miss E. C. Boettcher, secy.-treas.; Harvey D. Cooke, sales mgr.; Manoel F. Behar, adv. mgr.; Henry J. Nichols, pur. agt.; Victor Wichum, chief engr.; H. A. Birdsall, works mgr.; and Henry Hull, fact. mgr.

United States Gauge Co., 525 Guardian Bldg., Cleveland, Ohio.

Manufacturers of pressure and vacuum gauges.

U. S. MINERAL WOOL

United States Mineral Wool Co., 280 Madison Ave., at 40th St., New York City.

Manufacturers of MINERAL WOOL insulation.

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